THE IRON TRADE REVIEW

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Outlook for Railroad Buying More Encouraging

And Important Negotiations are Pending—Bessemer Pig Iron Market Declines—Low Bid in Basic for St. Louis Delivery

The outlook for better railroad buying in the iron and steel market is more favorable. Leading fabricating interests report gratifying inquiry for bridge work in different sections and indications continue to point to more active buying of equipment. The Baltimore & Ohio railroad, it is reported on good authority, will soon take up the purchase of 6,000 cars. The Steel Corporation's unfilled tonnage will show considerable shrinkage when the next statement is made. New business, on account of disturbed conditions, has declined. Export business continues favorable. The National Tube Co. has received an order for 40,000 tons of steel line pipe for the Canadian Western Gas Light, Heat & Power Co.

Pig Iron

The most interesting event of the week in the pig iron market was the breaking of the market on Bessemer pig iron, held for over a year at $15, valley. A sale of 1,000 tons was made to a Cleveland consumer at $14.65, valley. In another case, $14.60, valley, was bid, but the order was not placed, as it was dependent upon getting a contract for castings. The basic average for September was $12.66, valley, the lowest price in years. On the inquiry of the Commonwealth Steel Co., of St. Louis, for 2,500 tons of basic, a bid of $12.50, valley, has been made, but the order has not been placed. Recent sales of basic pig iron to eastern steel works aggregate from 15,000 to 20,000 tons, the largest sale being for 10,000 tons for shipment running into the first quarter. In the Philadelphia district, 5,000 to 6,000 tons of basic were purchased during the week and 5,000 tons of low phosphorus iron was taken by a western Pennsylvania steel company from the Lebanon district at about $16.50, furnace. Cast iron pipe makers have been liberal buyers in eastern territory. The Pennsylvania railroad, which has been inquiring for about 15,000 tons of foundry grades for delivery at Altoona, Pa., has taken 5,000 tons from a nearby furnace. The usual quotation on foundry iron is $13.50, valley, but this can be shaded on very desirable business.

Plates and Shapes

There is strong competition on plates and shapes and considerable business is developing, including orders from fabricators and others for stock. It is a natural development of the very low quotations. A fabricator in Cleveland has made a contract with an independent company for 2,000 tons of plates and shapes for stock at about 1.20c, Pittsburgh, and agreed to specify immediately on 800 tons. The Fort Pitt Bridge Co., Pittsburgh, has taken a contract for 5,000 tons for grade elimination work in Cleveland, but the plain material has not been awarded. New enterprises of importance include a water line from Ten-Mile Run to the Croton reservoir, to be built by the city of New York, which will require from 8,000 to 9,000 tons of steel plates; a very large powerhouse at Mauch Chunk, Pa., to be built by the Lehigh Coal & Navigation Co., and additions to be built by the Baldwin Locomotive Co. at Eddystone, Pa., which will require 5,000 tons of structural material. Ship builders in the east are figuring on about 10,000 tons of plates and shapes for steamships for the Hawaiian trade. The Harlan & Hollingsworth Corporation has recently taken contracts for boats, requiring about 2,500 tons of steel.

Pipe

Following the issuing of a new card giving lower prices of merchant steel pipe, manufacturers of merchant iron pipe issued a card showing reductions of about $2 per ton on several sizes of black pipe and from $4 to $10 on galvanized butt welded, and $4 to $12 on galvanized lap welded. Owing to the extremely low prices made on boiler tubes, several western Pennsylvania manufacturers have withdrawn from the market. The principal award of the week in cast iron pipe was 2,000 tons by Kansas City to the United States Cast Pipe & Foundry Co.

Railroad Buying

An order for six steel barges for the Lehigh Valley railroad, requiring 2,000 to 3,000 tons of plates, has been awarded to the Cramps' shipyard. The Buffalo, Rochester & Pittsburgh has awarded 500 hoppers to the Cambria Steel Co., 500 to the Standard Steel Car Co., and 500 to the Pressed Steel Car Co. The steel required for the thousand cars to be built by the last two companies, amounting to 14,000 tons, will be furnished by the Carnegie Steel Co. The Pennsylvania Railroad Co. has awarded 1,150 freight cars to the Cambria Steel Co. In rails, the Southern railroad placed 2,100 with the Tennessee company and later entered 3,000 tons in scattering orders. The Santa Fe order calls for 20,000 tons of open-hearth rails and 3,000 tons of fish plates and track supplies.

WORLD'S IRON MARKETS

PITTSBURGH

Price of Bessemer Broken—Low Average Price for Basic.

Office of THE IRON TRADE REVIEW,
2148-49 Oliver Bldg., Oct. 3.

The last quarter of the year opens with the steel mills in the Pittsburgh and valley districts operating at about the same rate as in September. Reports for September show a slight falling off in production and shipments as compared with August. The price situation is practically unchanged. Low quotations on all steel products are bringing out a fair volume of business for immediate rolling, but, with few exceptions, the mills cannot figure upon rolling schedules very far ahead. The transportation companies are showing a disposition to buy more freely and consumers generally are giving more attention to future requirements, but are not inclined to cover for the first half of next year except at today's prices. Among the important developments in this market during the week was the announcement by a trade authority of $12.667, valley, or $13.567, Pittsburgh, as the basic pig iron average for September, the lowest monthly average in years, and the sale of 1,000 tons of standard Bessemer iron at $14.65, valley, this transaction breaking the $15, valley, Bessemer market established a year ago.

The Buffalo, Rochester & Pittsburgh railroad has divided an order for 1,500 steel hopper cars among the Cambria Steel Co., the Pressed Steel Car Co., and the Standard Steel Car Co. The 14,000 tons of plates and other material for the 1,000 cars to be built by the two last named companies will be rolled by the Carnegie Steel Co. The Pennsylvania railroad has placed an order with the Cambria Steel Co. for 1,150 freight cars of various types. The Pennsylvania lines west have awarded a contract to the Fort Pitt Bridge Co., Pittsburgh, for grade crossing elimination work at Cleveland, which will require 5,000 tons of steel. The contract for the steel has not been awarded, but in all probability will go to a local mill. Liberal specifications for Bessemer billets and sheet bars have been received by local mills for fourth quarter shipment. Some improvement is noted in the markets on sheets and wire products.

Pig Iron.—The local pig iron market has attracted considerable attention during the past week, not on account of the amount of iron sold, but because of developments as regards the price situation. The basic pig iron average for the month of September, as compiled by a trade authority and based on actual sales, is given at $12.667, valley, or $13.567, Pittsburgh, as compared with $13, valley, for July and August. Reports for September show that two sales of basic were made on a basis of $12.60, valley, one of which involved 1,000 tons. Statistics covering the last six years show that this is by far the lowest monthly average ever announced on basic pig iron.

On Oct. 2, the same trade authority announced that the Bessemer pig iron average for September was $15, valley, or $15.90, Pittsburgh, the same as for the last 12 months, this average having been compiled only on sales of 1,000 tons or more. This morning it was announced that a valley furnace interest has sold 1,000 tons of standard Bessemer to a Cleveland steel company on a basis of $14.65, valley furnace, or $15.55, delivered, Cleveland, the iron carrying the full freight rate of 90 cents. This is the first straight sale of Bessemer involving 1,000 tons, which has been reported in several months and this transaction breaks the $15, valley, Bessemer market which was established a year ago.

The Pennsylvania Railroad Co., which recently entered the market for a round tonnage of various grades of iron for delivery at its Altoona, Pa., shops over the remainder of the year, has purchased 5,000 tons of foundry grades from a nearby furnace. Consumers of foundry iron continue to take shipments against contracts in a satisfactory manner and, while the market appears to be firm at $13.50, valley, on No. 2, this price, no doubt, could be shaded on particularly desirable business. A few lots of malleable iron have been sold on a basis of $13.15, valley. We quote the market as follows:

(Prompt Shipment.)

Bessemer, valley	$14.65
Bessemer, Pittsburgh	15.55
Basic, valley	12.60
Basic, Pittsburgh	13.50
No. 2 foundry, Pittsburgh	14.40
Gray forge, Pittsburgh	13.90
Malleable, Pittsburgh	14.00

(Fourth Quarter.)

Bessemer, valley	$14.65
Bessemer, Pittsburgh	15.55
Basic, valley	12.60
Basic, Pittsburgh	13.50
No. 2 foundry, Pittsburgh	14.40
Gray forge, Pittsburgh	13.90
Malleable, Pittsburgh	14.00

Ferro-Alloys. — Inquiries involving from 2,500 to 3,000 tons of ferro-manganese for forward delivery, referred to last week, are still pending. In addition, several consumers in the Chicago and St. Louis districts have put out inquiries for first half requirements. While the larger sellers continue to ask $38 to $38.50, seaboard, on this material for forward delivery, one or two carload lots for immediate shipment have been sold at $36.50 to $36.75, Baltimore. There is little demand for 50 per cent ferro-silicon. The general asking price on domestic material is from $57 to $58, Pittsburgh, while sellers of foreign material are asking $60 to $62.50, Pittsburgh. A consumer east of Pittsburgh last week bought about 300 tons of domestic material on a basis of $56, Pittsburgh.

We quote ferro-manganese at $36.50 to $37, Baltimore, for prompt shipment, and at $38 to $38.50, Baltimore, for forward delivery. The freight rate from Baltimore to Pittsburgh is $1.95 per ton.

Fifty per cent ferro-silicon is quoted at $57 to $62.50, Pittsburgh, for prompt and forward delivery; 12 per cent, $25; 11 per cent. $24; 10 per cent, $23, f. o. b. Jackson, Jisco and Ashland furnaces. The freight rate to Pittsburgh is $1.90. The foreign grades are held at $1 or more a ton over domestic prices.

Plates.—The Buffalo, Rochester & Pittsburgh railroad has awarded contracts for 1,500 standard hopper cars, as follows: 500 to the Cambria Steel Co.; 500 to the Pressed Steel Car Co., and 500 to the Standard Steel Car Co. About 14,000 tons of steel will be required for the 1,000 cars to be built by the two last named companies and will be furnished by the Carnegie Steel Co. The Buffalo,

Rochester & Pittsburgh railroad has also taken bids on 1,000 steel underframes. The Pennsylvania Railroad Co. has placed an order with the Cambria Steel Co., for 1,150 freight cars. The Pittsburgh & Lake Erie Railroad Co. is figuring upon 1,000 steel hopper cars. Car builders report that pending inquiries involve a large number of cars. Some of these inquiries have been pending for two or three months. Aside from the car business, orders for plates are chiefly for small lots for early shipment, although two of the leading manufacturers in the Pittsburgh territory report that the total production in September equaled that of the preceding month. The price situation shows little change and 1.25c Pittsburgh, appears to be the market level. We quote the market as follows:

Tank plates, ¼ inch thick, 6¼ to 100 inches, 1.25c. Extras are as follows, per 100 pounds: Boiler and flange steel plates, 0.10c; A. B. M. and ordinary firebox steel plates, 0.20c; still bottom steel, 0.30c; marine steel, 0.40c; locomotive firebox steel, 0.50c; all sketches excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches, 0.10c; circles, 0.20c. Plates in widths over 100 inches up to 110 inches, 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1c. Gages under ¼ inch to and including ⅜-inch plate on thin edge, 0.10c; under ⅜ and including No. 9, 0.25c. Five cents extra for less than carloads. Terms net cash in 30 days.

Sheets.—Practically all manufacturers of galvanized sheets report that the volume of business booked in September exceeded that of the preceding month. Several of the larger mills in this section have a fair tonnage of galvanized sheets on their books and two or three of the mills cannot promise delivery within three or four weeks. New demand for black and blue annealed sheets is only moderate. Owing to the fact that a moderate tonnage of galvanized sheets has been booked and that some of the mills will be assured steady operation over the next month, this market appears to be fairly firm at 2.90c Pittsburgh, for No. 28 gage. Reports are still heard of low prices on black sheets, but one buyer, who offered an order for a fair tonnage last week on a basis of 1.85c Pittsburgh, placed an order this week at 1.90c Pittsburgh. The Whitaker-Glessner Co. has closed its sheet mills temporarily. From a tonnage standpoint the outlook for this market is more promising, although little encouragement is found in the price situation. We quote the market as follows, with $1 a ton added as the delivered price in the Pittsburgh district:

Blue annealed sheets No. 10 gage, 1.40c to 1.45c; black annealed sheets No. 28 gage, 1.90c to 1.95c; galvanized sheets, No. 28 gage, 2.90c to 2.95c; painted roofing sheets, $1.30 to $1.35 per square for No. 28 gage, 2½-inch corrugation; galvanized roofing sheets, $2.50 to $2.55 per square for No. 28 gage, 2½-inch corrugation f. o. b. Pittsburgh.

Tin Plate.—This market is seasonably quiet. Buying for delivery this year is practically over and manufacturers have not yet opened their books for first half delivery business, although a few orders have been placed for shipment over the first six months of 1912. A number of the tin mills which were active all through September are idle this week. We quote the market as follows:

Coke tin plate, 100-pound basis, 14 x 20, $3.60 to $3.70 f. o. b. mill, Pittsburgh district.

Rails and Track Material.—Some of the larger eastern trunk lines are figuring upon their 1912 steel rail requirements and the mills have opened their books for the next year. Domestic rail orders during the past week have been only for small lots, but rail mills continue to operate on about the same basis as a month ago, due to the liberal specifications against contracts. A fair proportion of the tonnage rolled in September was for export. New demand for light rails is not very heavy. Most of the trunk lines bought spikes and track supplies very liberally in September, with the result that there is not a great deal of new business pending at present. We quote the market as follows, the base price on open-hearth steel rails being 1.34c per pound at the mill:

Fifty-pound and heavier, 1.25c per pound; carloads and less than 500 tons, 1.34c per pound; light rails on base weight of 40 to 45 pounds, 1.16c, the schedule on the other weights being irregular and subject to negotiations; angle splice bars for standard sections, 1.50c, Pittsburgh; track bolts, 2.20c to 2.25c, Pittsburgh.

Railroad Spikes.

4½, 5 and 5½ and ⅝	$1.45 to 1.50
3, 3½, 4, 4½ and 5 x ½	.10
3½, 4 and 4½ x ⅞	.20
3, 3½, 4 and 4½ x ⅜	.30
2½ x ⅜	.40
2½, 3 and 3½ x ⅞	.60
2 x ⅞	.80

Steel.—As a result of the liberal specifications against contracts for Bessemer billets and sheet bars received by the mills during the week for fourth quarter shipment, some of the larger manufacturers announce that they are now assured steady operation at the present rate throughout the remainder of the year. Three or four large contracts for crude steel will expire Dec. 31, and one or two of the larger users during the week put out inquiries involving round tonnages for shipment over the first half of the year, but some of the larger mills, at least, are going slowly in the matter of quoting prices for first half shipment. On Bessemer billets and sheet bars, $20 and $21, respectively, Pittsburgh or Youngstown, appear to be the absolute minimum, while users of open-hearth steel who can take the product of the smaller mills have been able to pick up small lots at $19 to $20 for billets and $19.50 to $20.50 for sheet bars. Concessions are still being made on forging billets and trading on a basis of $25, Pittsburgh, is more general. The larger mills report that the daily average tonnage entered on mill books in September was about equal to that of August, although the total for the month was below that of August, the latter month having two more working days. We quote the market as follows:

Bessemer 4 x 4 billets with 0.25 carbon and less are quoted at $20 to $21, with the usual extras for size and analysis, and open-hearth rolling billets, $19 to $20; Bessemer sheet and tin bars are quoted at $21 to $22, and open-hearth sheet bars are quoted at $19.50 to $20, f. o. b. Pittsburgh or Youngstown, with full freight to destination added. Forging billets are quoted at $25 to $26, Pittsburgh.

Hoops and Bands.—Specifications against contracts for hoops and bands are coming in at about the same rate as in September and the low prices have brought out some new business, although the demand is considerably below the capacity of the mills. We quote the market as follows:

Hoops in carload lots, 1.35c to 1.40c, Pittsburgh; in less than carload lots, 1.45c to 1.50c; bands, 1.15c to 1.20c, base, with net extras, as per standard steel.

Merchant Bars.—As a result of the liberal specifications sent in by users of steel bars, the month opened with the mills in this territory running at about the same rate as in September. While low prices are still being quoted on desirable business, some mills are not as anxious to take small orders at prices noted last week and are quoting 1.20c, Pittsburgh, as the minimum. Some business has been offered for delivery next year, although the bulk of the trading during the past week has been for small lots for immediate rolling. The market on bar iron is still very quiet, comparatively little tonnage having been booked during the week. Manufacturers of shafting report that there has been a slight improvement in specifications, although fresh buying

has been light. We quote the market as follows:

Common iron bars, 1.25c, Pittsburgh; Bessemer and open-hearth steel bars, 1.15c to 1.20c; plow and cultivator, 1.20c; channels, angles, zees, tees, under 3 inch, 1.25c to 1.30c, all f. o. b. mill. The following differentials are maintained on steel. Less than 2,000 pounds of a size, 0.35c advance. Cold rolled and ground shafting, 60 and 5 per cent to 60 and 10 per cent off in carloads and 57 per cent in less than carloads, delivered in base territory.

Muck Bar.—Some of the inquiries noted in this market recently have been withdrawn and there has been no buying of any importance. We continue to quote muck bar nominally at $28, Pittsburgh, with a premium of $1 a ton for all pig iron muck bar.

Structural Steel. — The Pennsylvania Lines West have awarded a contract to the Fort Pitt Bridge Co., Pittsburgh, for the grade crossing elimination work at Cleveland, which will require 5,000 tons of steel. The contract for the steel has not yet been placed, but in all probability will go to a local mill. Several other fairly large structural projects are pending in this market, but comparatively few awards have been made. The Jones & Laughlin Steel Co. will roll 800 tons of steel for a new building, to be erected for the H. J. Heinze Co., Northside, Pittsburgh. Most of the structural steel mills and fabricating shops have a fair amount of business on their books, but low prices are still being quoted on the new business appearing. We quote the market as follows:

Beams and channels, 15 inches and under, 1.25c; over 15 inches, 1.35c; zees, 1.25c; tees, 1.30c; angles, from 3 to 6 inches, 1.25c; over 6 inches, 1.35c; universal and sheared plates, 6¼ inches wide and wider, 1.25c.

Merchant Pipe.—The larger manufacturers of merchant iron pipe in the western Pennsylvania and eastern Ohio districts have put out a new basing card, dated Oct. 2. On Monday of this week, the larger manufacturers of iron pipe announced that they would not put out a new basing card, but this was followed with the amouncement to the trade by an eastern Pennsylvania company that a new card would be issued within a few days, and it is now believed that all manufacturers of iron pipe will meet the new prices.

The new card on merchant steel pipe published in this market last week became effective Oct. 2. This card shows a reduction of $2 a ton on merchant black steel pipe, with the exception of ⅜-inch and ½-inch, on which the reduction is $4 a ton; a reduction of from $6 to $14 a ton on galvanized steel pipe and a reduction of $2 a ton all through the list on extra strong and double extra strong pipe. This card shows a re-arrangement of the smaller sizes and on ⅛ and ¼-inch, the price is advanced $2 a ton on black steel pipe, while on galvanized steel pipe the price on these sizes is advanced $10 a ton. The Philadelphia Co., Pittsburgh, has entered the market for five miles of 6-inch line pipe. Bids have gone in on 40,000 tons of 4½ to 16-inch steel line pipe for the Canadian Western Gas, Light, Heat & Power Co. The leading interest was awarded a contract today for 10 miles of 3 to 8-inch line pipe. We quote the following official discounts in carload lots, subject to the usual preferential discount to the larger buyers, merchant pipe, where specified, being offered in from ⅛ to 6 inches (the discounts given below are quoted on the new merchant steel card, dated Oct. 2, while the discounts on iron pipe are those announced in the card dated Oct. 2, 1911):

Iron and Steel Pipe Basing Prices.

	Steel.		Iron.	
	Butt weld.			
	Black.	Galv.	Black.	Galv.
⅛, ¼ inch	73	53	68	48
⅜ inch	74	64	69	59
½ inch	77	67	72	62
¾ to 1½ inch	80	72	75	67
2 to 3 inches	81	74	76	69
	Lap weld.			
2 inches	77	70	72	65
2½ to 4 inches	79	72	74	67
4½ to 6 inches	78	70	73	65
7 to 12 inches	76	66	71	61
13 to 15 inches	..	..	47	..
Extra Strong, Plain Ends.				
	Butt weld.			
⅜, ¼, ⅛ inch	70	60	65	55
½ inch	75	69	70	64
¾ to 1½ inch	79	73	74	68
2 to 3 inches	80	74	75	69
Extra Strong, Plain Ends.				
	Lap weld.			
2 inches	76	70	71	65
2½ to 4 inches	78	72	73	67
4½ to 6 inches	77	71	72	66
7 to 8 inches	70	60	65	55
9 to 12 inches	65	55	60	50
Double Extra Strong, Plain Ends.				
	Butt weld.			
½ inch	65	59	60	54
¾ to 1½ inch	68	62	63	57
2 to 3 inches	70	64	65	59
Double Extra Strong, Plain Ends.				
	Lap weld.			
2 inches	66	60	61	55
2½ to 4 inches	68	62	63	57
4½ to 6 inches	67	61	62	56
7 to 8 inches	60	50	55	45

Plugged and reamed pipe is furnished at 2 points higher price, either butt or lap weld.

Boiler Tubes.—On account of the extremely low prices on steel boiler tubes, given on the new basing card, which became effective Sept. 1, four or five manufacturers in the western Pennsylvania territory have withdrawn from the market and have rejected orders involving moderately heavy tonnage for immediate shipment, which were offered at the quotations given on the new card. Present prices are the lowest that have been quoted in many years. A new basing card on iron tubes has not been issued, but likely will come out in a few days, as this market is very irregular. We quote the official discounts on steel boiler tubes in carload lots as follows:

1¼ to 2¼ inch	65
2½ inch	67½
2¾ to 3¼ inch	72
3½ to 4½ inch	75
5 and 6 inch	67½
7 to 13 inch	65

To destination east of Mississippi river will be sold at delivered discount for carloads lowered by 2 points, for lengths 22 feet and under; longer lengths, f. o. b. Pittsburgh. Usual extras to jobbers and boiler manufacturers.

Wire Products.—The volume of business in wire products entered on mill books in September exceeded that of August and the general tone of the market appears to be slightly firmer, but fall buying so far has not been up to expectations. This is due largely to the fact that buyers do not find it necessary to cover so far in advance on account of the increased capacity of the wire mills during the past few years. Efforts of manufacturers to hold the market at $1.70, Pittsburgh, on wire nails, and $1.50, Pittsburgh, on plain wire, have not been successful, although concessions very rarely exceed $1 a ton. Indications are that production will be increased slightly about the middle of October. We quote the market as follows:

Wire nails, jobbers' carload lots, $1.65 to $1.70; retailers' carload lots, $1.75 to $1.80; cut nails (western makers), jobbers' carload lots, $1.60; painted barb wire, jobbers' carload lots, $1.65 to $1.70; retailers' carload lots, $1.80, with 30c for galvanizing; plain wire to jobbers in carloads, $1.45 to $1.50, and to dealers, in carloads, $1.55 to $1.60; polished staples, $1.70; galvanized staples, $2.

Wire Rods.—Users of wire rods are covered by contract and are specifying more freely, with the result that there has been no fresh buying of any importance. On desirable business, $27, Pittsburgh, no doubt could be shaded, but in view of the fact that there has not been enough trading to test the market, we continue to quote Bessemer and open-hearth wire rods nominally at $27, Pittsburgh.

Coke.—Aside from sales of furnace coke aggregating about 5,000 tons for October shipment on a basis of $1.50, ovens, there has been little trading in the market during the week. Consumers are showing some interest in forward requirements, but there is little written inquiry pending and no sales have been made for forward delivery. Demand for foundry coke is fair and prices are unchanged. Production and shipments last week were slightly heavier than for the preceding week, the output of the merchant ovens being increased 5 per cent. Statistics compiled by the Connellsville *Courier* shows that production during the first nine months of 1911 amounted to 11,677,186 tons, while shipments for the same period aggregated 11,688,189 tons. During the first quarter, production exceeded by 130,000 tons, while in the second quar-

ter shipments were 115,000 tons greater than production. Late developments show that buying of Connellsville coke by British Columbia smelters, referred to in previous reports, aggregates 100,000 tons. The requirements as to quality are very liberal, there being no restrictions as to sulphur, such as made by furnace men. The price paid for this coke is understood to have been $1.40, ovens. We quote standard Connellsville furnace coke for prompt shipment at $1.50, ovens, and for delivery over the remainder of the year at $1.65 to $1.75, ovens. On high grade Connellsville foundry coke, we quote from $1.85 to $1.95, ovens, for prompt shipment, and from $2 to $2.40, ovens, on contract. The Connellsville *Courier's* figures for the week ending Sept. 23, show 26,017 active ovens with an output of 317,035 tons, as compared with 25,999 active ovens and a production of 310,743 tons the previous week.

Old Material.—Three or four of the larger consumers of old material in the western Pennsylvania territory have declared an embargo against shipments of scrap to their mills, the principal consumer at Monessen, Pa., having declared its third embargo within two months. A large amount of old material is being offered by the railroads and other producers, but consumers are buying only to cover urgent needs. Prices are weaker. We note a reduction of $1 a ton on iron axles; a reduction of 50 cents a ton on bundled sheet scrap, stove plate and low phosphorus, and a reduction of 25 cents a ton on old iron rails, machine shop turnings and cast borings, as compared with quotations made a week ago. We quote, gross tons, delivered in the Pittsburgh district, including Monessen, Sharon, Steubenville, Brackenridge and Follansbee, as follows:

Heavy melting scrap	$12.00 to 12.50
Rerolling rails	13.00 to 13.25
Malleable	12.00 to 12.50
Bundled sheet scrap	10.00 to 10.50
Iron axles	22.00 to 23.00
Old iron rails	14.50 to 15.00
Stove plate	9.50 to 10.00
No. 1 wrought scrap	13.00 to 13.25
Old car wheels	12.25 to 12.75
Low phosphorus	14.50 to 15.00
Machine shop turnings	9.00 to 9.25
Cast borings	8.25 to 8.75
No. 1 cast scrap	12.50 to 12.75

The Pacific Coast Steel Co. has filed a mortgage for $1,200,000, given to the Anglo-California Trust Co., of San Francisco, to secure the payment of various bond issues, placing a lien on all of the company's property in California, Oregon and Washington. The instrument is signed by President D. P. Doak and Secretary L. M. Fletcher, both of San Francisco.

CHICAGO

Pig Iron Users Demand Prompt Shipment—Good Orders for Steel Products.

Office of THE IRON TRADE REVIEW,
1328 Monadnock Block, Oct. 3.

The most encouraging features of the situation at present are the large volume of current orders for steel products in the face of unsettled conditions and a liberal movement of pig iron against existing contracts. On account of the heavy volume of current orders for steel, the Illinois Steel Co. has been obliged to start up its No. 2 blooming mill at South Works. There have been no other changes in mill operations in this territory recently. Manufacturers are quoting 1.33c to 1.38c Chicago, on the general run of steel bar business and the large majority of the orders taken by the smaller mills are at the lower figure. Considerable car repair business will be turned over to western car-building plants by the Illinois Central and Harriman lines on account of the strike of the shopmen and a little buying of iron and steel from car builders whose stocks are low may result. Extremely low prices on plain material do not seem to have stimulated the placing of fabricating contracts to any extent. The largest contract noted in this district last week was for the Boyce building, Chicago, 677 tons, let to A. Bolters' Sons. The Grand Trunk is in the market for 20 steel underframe flat cars and has purchased 25 steel underframe coaches and 25 express cars from the Pullman Co. The United States Cast Iron Pipe & Foundry Co. has taken a contract for 2,100 tons of water pipe at Kansas City.

Pig Iron.—A fairly large volume of iron is moving in fulfillment of existing contracts and urgent requests for shipment are being received from all quarters. This does not necessarily indicate that the foundry melt is increasing, but shows rather conclusively that foundries have worked off their stocks and are depending on the shipments which they receive from day to day. Any increase in the tonnage melted would therefore be quickly felt in the market. At the present time, the following furnaces are in blast in this district: Five at Gary; seven at South Works; four at Joliet; one at Bayview, and two in South Chicago. Only three of these are merchant furnaces.

Southern furnaces are showing more willingness to quote on business for delivery over next year and some quotations have been made at $10 Birmingham, for last quarter and first quarter delivery, while the same interests are asking $10.25 on first quarter alone. While the price of Jackson county 8 per cent silveries is generally held at $18.40 Chicago, this will be shaded 25c a ton on desirable business. Although the volume of shipments is holding up very well, September sales were 20 per cent less than August. The Commonwealth Steel Co. is in the market for 2,500 tons of northern basic. No other inquiries of consequence are noted in the west.

The following prices represent the market for Chicago delivery, except Northern foundry No. 2 and malleable Bessemer made in local furnaces, which are quoted f. o. b. furnace:

(Shipment this year.)

Lake Superior charcoal	$17.00
Northern foundry No. 2	14.50
Southern foundry No. 2	14.35
Southern silveries, 5 per cent silicon	16.10
Jackson Co. silveries, 8 per cent	18.40
Malleable Bessemer	14.50
Alabama basic	14.60

Billets.—While the Chicago market quotations are unchanged, lower prices in the east are causing a little reflected weakness in the west, and manufacturers would find it difficult to maintain their quotations, were it not that the demand in the west is fairly good. We quote, open-hearth forging billets, $26 to $27; re-rolling billets, $23.60, Chicago.

Merchant Bars.—Current specifications for steel bars continue to be fairly satisfactory, largely on account of activity among the agricultural implement makers. Manufacturers are quoting 1.33c to 1.38c, Chicago, on the general run of business. The large majority of the business being taken by the smaller mills is placed at the lower figure. There is very little news in the iron bar situation at present. Iron mills are still quoting 1.20c on practically all orders and the volume of operations remains at about 60 per cent of the capacity of the larger producers, without much prospect for a change in the immediate future. Considerable car repair business will be turned over to western car building plants by the Illinois Central and Harriman lines on account of the strike and a little buying from car builders whose stocks are low may result. Specifications for shafting have been slightly larger, but new business remains light.

We quote, Chicago delivery, as follows:

Bar iron, 1.20c to 1.25c; hard steel bars, rerolled, 1.20c to 1.25c; soft steel bars and bands and small shapes, 1.33c to 1.38c, base; hoops, 1.53c to 1.58c; smooth finished machinery steel, 1 inch and larger, 1.78c. Shafting 60 per cent off list for carload lots, 55 per cent off for less.

On iron and steel from local stock, we quote as follows:

Bar iron, 1.80c to 1.90c per pound base; soft steel bars, 1.65c to 1.75c per pound base; soft steel hoops, 1.80c to 1.90c, full extras.

Structural Material.—Extremely low prices on plain material do not seem to have stimulated the placing of fabricating contracts to any extent. Contracts placed in this market last week total only 1,746 tons, of which 362 tons is inter-company business between various subsidiaries of the United States Steel Corporation. The largest contract placed in this district last week was for the Boyce building, Chicago, 677 tons, which was let to A. Bolters' Sons. Other structural lettings are as follows: Nail warehouse for American Steel & Wire Co., at De Kalb, Ill., 138 tons, to Illinois Steel Co.; one 135-foot truss span for the Muscatine North & South Syndicate, 104 tons, to the American Bridge Co.; municipal court building, Michigan avenue, Chicago, 285 tons, to Morava Construction Co.; headframe, etc., for No. 2 Hamilton shaft, Chapin mine, for Oliver Iron Mining Co., Iron Mountain, Mich., 229 tons, to American Bridge Co.; and high school, South Bend, Ind., 313 tons, to H. G. Christman & Co. The Chicago, Milwaukee & St. Paul, which was in the market for 600 tons of bridge material, as mentioned in this report last week, has placed this order with the Milwaukee Bridge Co.

We quote, structural material, f. o. b. Chicago, as follows:

Beams and channels, 15 inches and under, 1.53c. For extras, see Pittsburgh report.

Plain material out of store is as follows:

All angles, 3 inches and larger, including 6 inches, $1.75 to $1.85 per 100 pounds; angles over 6 inches, $1.85 to $1.90 per 100 pounds, base; beams, 3 to 15 inches, inclusive, $1.75 per 100 pounds, base; channels, 3 inches and larger, $1.75 per 100 pounds, base.

Rails and Track Fastenings.—The rail business continues light with a fair volume of orders for track fastenings. No further price changes are noted. The demand for light rails is fair. Up to date, there has been no change in rail mill operations in this territory.

We quote, light rails, f. o. b. Chicago, and track fastenings, f. o. b. Joliet, as follows:

Light rails, carloads, 40 to 45-pound, 1.16c to 1.20½c; 30 to 35-pound, 1.19½c to 1.24c; 16, 20 and 25-pound, 1.20½c to 1.25c; 12-pound, 1.25c to 1.29½c.

Light section relayers, 45 pounds and under, subject to inspection, $21 to $23; standard section relaying rails, subject to inspection, $23.50 to $24.

Track fastenings, f. o. b. Joliet, angle bars, 1.50c to 1.60c; railroad spikes, 1.60c to 1.70c; smaller size spikes, 1.70c, base; track bolts with square nuts, 2.10c, base.

Plates.—The Missouri Pacific inquiry is said to be still under active negotiation and there is some probability that it may be placed in the near future. This calls for 4,000 cars of various descriptions. Specifications for plates are fair. The Illinois Steel Co. has started up its No. 2 blooming mill at South Works. The Grank Trunk is in the market for 20 steel underframe flat cars and has ordered 25 steel underframe coaches and 25 express cars from the Pullman Co.

We quote, mill prices, f. o. b. Chicago, as follows:

Tank plates, ¼ inch thick, 6¼ to 100 inches wide, 1.48c. For extras, see Pittsburgh report.

Store prices are as follows:

Tank steel, ¼ inch and heavier, up to 72 inches wide, 1.75c to 1.85c.

Sheets.—The local maker continues to operate at 85 per cent capacity. It is impossible, however, to get any amount of business ahead on the mill books. Deep cuts are ruling and some further concessions are noted on blue annealed sheets particularly. The official price is being shaded all the way from $1.50 to $2.50 a ton at the present time.

We quote, store prices, f. o. b. Chicago, as follows:

For mill prices, see Pittsburgh report. Freight to Chicago, 18 cents.

We quote, store prices, f. o. b. Chicago, as follows:

Blue annealed, No. 10, 2.00c; No. 12, 2.05c. Box annealed, No. 28, 2.65c. Galvanized, No. 28, 3.55c.

Wire Products.—The wire mills in this territory are operating on good schedules, although the demand for nails is a little slack. It is quite likely that 1911 fall business will exceed 1910, even with one more manufacturer in the field than was the case a year ago. There is more stability to wire prices than was the case a short time ago.

We quote the market, f. o. b. Chicago, as follows:

Wire nails, jobbers, carload lots, $1.88; retailers' carload lots, $1.93; retailers' less than carload lots, $2.03; painted barb wire, jobbers' carload lots, $1.88; retailers' carload lots, $1.93; retailers', less than carload lots, $2.03, with 30c for galvanizing; plain wire to jobbers, $1.68; plain wire, retailers' carload lots, $1.73.

Merchant Pipe and Tubes.—The prices of tubes out of store have not been reduced. The demand for boiler tubes is unchanged, but business in merchant pipe shows a little increase. The Chicago plumbers and steam-fitters seem to be working in harmony and the market is feeling the beneficial effect of the cessation of labor troubles.

We quote, merchant pipe and tubes, f. o. b. Chicago, as follows:

Iron and Steel Pipe Basing Prices.

	Steel. Black.	Steel. Galv.	Iron. Black.	Iron. Galv.
⅛-⅜ inch	69.2	54.2	63.2	48.2
½ inch	72.2	59.2	66.2	53.2
2 in. to 3 in.	77.2	66.2	72.2	61.2
4½-6 inches	74.2	63.2	69.2	58.2
7-12 inches	71.2	54.2	67.2	50.2
Extra Strong Plain Ends.				
½ inch	70.2	63.2	54.2	52.2
2-3 inches	75.2	68.2	61.2	55.2
7-8 inches	65.2	....	59.2	47.2
Double Extra Strong.				
½ inch	58.2	50.2	....	....
2-3 inches	63.2	55.2	....	....
7-8 inches	53.2	41.2	....	....

Tubes.

	Lap weld steel. Per cent.	Charcoal iron. Per cent.	Shelby seamless. Per cent.
1 inch	39	..	57½
1¼ to 2¼ inch	55	40	35
2¾ to 3¼ inch	62½	50	46

Cast Iron Pipe.—Although the market has been quiet during the past ten days, a few fair sized orders have been placed. The city of Kansas City has awarded 2,100 tons of 6 to 30-inch water pipe to the United States Cast Iron Pipe & Foundry Co. The American Cast Iron Pipe Co., Birmingham, Ala., was awarded 200 tons at Canton, Mo., and 600 tons at Los Angeles, Cal., were divided between two pipe makers in Lynchburg, Va. Bids on 400 tons for Gross Point Shores, Mich., are still being considered.

We quote the market, f. o. b. Chicago, as follows:

Four-inch water pipe, $26.50; 6 to 12 inches, $24.50, larger sizes, $24; gas pipe, $1 a ton higher.

Old Material.—Declines are still the order of the day in the local scrap market, and in fact nothing else could be expected in view of the unusually large amounts of material in the hands of producers. Several railroads nearly a year ago began a policy of holding their accumulations of old material for better prices, but it is now generally realized that this policy was a mistake. Prices at present are suffering from the accumulated weight of these holdings. Lower prices are noted on old car wheels, railroad wrought, iron and steel axles and angle bars, the cuts in general averaging 25c a ton.

We quote, for delivery in consumers' yards, Chicago, as follows:

GROSS TONS.

Old car wheels	$12.50 to 13.00
Old iron rails	14.50 to 15.00
Rerolling rails (5 ft. and over)	12.25 to 12.75
Old steel rails (3 ft. and under)	11.25 to 11.75
Frogs, switches and guards	10.50 to 11.00
Heavy melting steel	10.50 to 11.00
Shoveling steel	10.25 to 10.75

NET TONS.

No. 1 R. R. wrought	$10.25 to 10.75
No. 2 R. R. wrought	9.25 to 9.75
Arch bars and transoms	13.50 to 14.00
Knuckles, couplers and springs	10.00 to 10.50
Shafting	14.00 to 14.50
Iron car axles	17.25 to 17.75
Steel car axles	15.50 to 16.00
Locomotive tires	14.00 to 15.00
Dealers' forge	9.25 to 9.75
Pipes and flues	7.50 to 8.00
No. 1 cast	10.50 to 11.00
No. 1 busheling	8.50 to 9.00
No. 2 busheling	6.50 to 7.00
No. 1 boiler cut	7.50 to 8.00
Boiler punchings	12.50 to 13.00
Cast and mixed borings	5.50 to 6.00
Machine shop turnings	6.50 to 7.00
Railroad malleable	10.00 to 10.50
Agricultural malleable	9.25 to 9.75
Angle bars, splices, etc., iron	12.00 to 12.50
Angle bars, steel	9.50 to 10.00
Stove plate and light cast scrap	9.25 to 9.75

CLEVELAND

Price of Bessemer Declines—Contract for Shapes for Stock.

Office of THE IRON TRADE REVIEW,
Penton Building, Oct. 3.

Iron Ore.—Total shipments of ore during September, 5,231,069 tons, making the total to Oct. 1, 24,837,137 tons, a decrease of 10,263,727 tons, compared with shipments to Oct. 1, 1910. It now seems probable that this shortage will about represent the figures by which this year's shipments will be less than those of last year.

On base ores with the guarantee of 55 per cent on old range and Mesabi Bessemer, and 51½ per cent on old range and Mesabi non-Bessemer, we quote as follows: Old range Bessemer, $4.50; Mesabi Bessemer, $4.25; old range non-Bessemer, $3.70; Mesabi non-Bessemer, $3.50.

Pig Iron.—The event of the week was the breaking of the price of Bessemer pig iron, which for more than a year had been held at $15, valley. A Cleveland company sold 1,000 tons at $14.65, valley, for delivery to a Cleveland consumer during the remainder of this year. The same firm bid $14.60 on 2,000 tons in the Pittsburgh district, but the order was not placed, and probably will not be, as the placing depended upon the getting of an order for castings. On 2,500 tons for shipment to St. Louis a bid of $12.50, valley, has been made. The foundry iron market is very quiet and $13.50 is the usual quotation, but this can be shaded on desirable business. We quote delivery in Cleveland for the remainder of the year as follows:

No. 1 foundry	$14.25
No. 2 foundry	13.75
No. 2 southern	14.35
Gray forge	13.00
Bessemer	15.90
Lake Superior charcoal	17.50
Jackson Co. 8 per cent silvery	17.50

Coke.—The only unusual feature of the market is that stock coke, usually obtained at about $1.10, is very scarce and is selling at about $1.45, or nearly as much as furnace coke. We quote:

Connellsville furnace coke, $1.50 to $1.55 for prompt delivery, and $1.60 to $1.70 for second half; Connellsville foundry coke, $1.85 to $1.95 for prompt, and $2 to $2.40 for second half.

Finished Material.—The principal transaction of the week was the making of a contract for about 2,000 tons of shapes for stock by a local fabricator, who agreed to specify 800 tons immediately. It is understood that the price was about 1.20c, Pittsburgh. A buyer who offered to contract for 2,000 tons at 1.17½c did not succeed in doing so. Although 1.25c, Pittsburgh, is the ordinary quotation on tanks, plates and sheets, 1.20c can be done on desirable business. Boiler plates are selling ordinarily at 1.30c. On steel bars 1.15c is the usual quotation, and this cannot be shaded except on very desirable business. It is true, however, that mills in Youngstown and elsewhere are quoting 1.15c at their mills, and disregarding the Pittsburgh base, as sheet manufacturers have been doing for a number of weeks. There is a good demand for wire and the leading interest reports September was one of the best Septembers in its experience. The prices of nuts and bolts are slightly firmer, especially on the heavier grades. The Hunkin-Conkey Construction Co. has taken the contract for 500 tons, about equally divided between reinforcing bars and shapes, for the Detroit base ball stadium. The contract for the steel has not been placed.

Old Material.—Few sales are being made this week in this territory, and the usual local consumers of heavy steel are making no fresh commitments, although they are taking material on old contracts. Canton, O., is also taking a little material, but Sharon, Pa., appears out of the market. No price changes have occurred and we quote, gross tons, f. o. b. Cleveland, as follows:

Old iron rails	$14.00 to 14.50
Old steel rails (under 6 ft.)	12.00 to 13.00
Old steel rails (over 6 ft.)	12.00 to 12.50
Relaying rails	20.00 to 21.00
Old car wheels	12.00 to 12.50
Old steel boiler plate	9.50 to 10.00
Malleable iron (railroad)	11.50 to 12.00
Steel axles	18.00 to 18.50
Axle turnings	8.50 to 9.00
Malleable iron (agricultural)	10.75 to 11.25
Heavy steel	11.00 to 11.50
Country mixed steel	9.00 to 9.50

We quote, net tons, as follows:

No. 1 R. R. wrought	$11.00 to 11.50
No. 1 busheling	9.00 to 9.50
No. 1 machine cast	11.00 to 11.50
No. 1 dealers' wrought	10.00 to 10.50
Machine shop turnings	6.75 to 7.00
Pipes and flues	8.00 to 8.50
Wrought drillings	6.75 to 7.00
Stove plate	9.00 to 9.50
Cast borings	6.00 to 6.50
Wrought iron piling plate	15.00 to 15.50
Wrought iron arch bars	15.50 to 16.00

CINCINNATI

Few Pig Iron Sales Made and Prices are Unchanged.

Office of THE IRON TRADE REVIEW,
808 Provident Bank Bldg., Oct. 3.

Pig Iron.—The market is very quiet and sales during the week have been light and unsatisfactory. Melters continue to call for shipments on contracts, yet otherwise manifest no interest in the situation beyond current requirements. Southern producers are still holding for the advanced price, and it is said that selling agencies as a rule are not openly quoting below these figures. It is generally admitted, however, that on desirable business a $10 quotation might be obtained at least for the remaining months of this year. As a general proposition, southern furnaces are not anticipating into next year, and have not opened their order books to any extent for this business. According to reports, it looks as though consumers as a rule, were not carrying their average tonnage on yards, but are depending on prompt shipments to keep plants moving. Some of the northern furnaces are said to be willing to contract into next year, at an advance of 50 cents per ton, or on a basis of $13.50, Ironton furnace. The open quotation for this year's delivery is still $13, with shipments moving regularly. There is an inquiry from a Michigan melter for 500 tons of 5½ per cent silicon, and a steel concern in Ohio is asking for prices on 500 tons of ferromanganese. A southern Ohio concern is figuring on 200 tons of foundry grades and a malleable manufacturer in same district several hundred tons. A melter in the northern part of the state wants approximately 100 tons of analysis iron, and a local industry is figuring on 75 to 100 tons of southern, 125 tons of northern and 100 tons of low phosphorus for October and November delivery. There was a sale made to a southern Ohio furnace of 2,000 tons of pyrites. The southern Ohio steel concern that tentatively has been in the market for a round block of basic is said to have decided to do nothing for the present. Freight rates from Birmingham, $3.25, and from Ironton, $1.20. We quote at Cincinnati as follows:

Southern foundry No. 2	13.25 to 13.75
Southern foundry No. 3	12.25 to 13.25
Southern foundry No. 4	12.50 to 13.00
Southern gray forge	12.00 to 12.50
Mottled	12.25 to 12.75
Southern No. 1 soft	14.70 to 15.45
Southern No. 2 soft	14.20 to 14.95
Standard southern car wheel	25.50
Northern No. 2 foundry	14.20
Northern No. 3 foundry	13.70
Northern No. 4 foundry	13.20
Jackson county 8 per cent silicon	16.95

Coke.—The inquiry that appeared last week, from a southern Ohio furnace embracing approximately 7,500 tons per month, has been closed, it is said, at ruling quotations. This was perhaps the largest transaction of the week, the remainder of the transaction being for small tonnage, and current requirements. Prices continue on the same basis and show no change. Shipments on contract are said to be for the most part satisfactory and moving along nicely. We quote from the leading coke producing districts as follows:

	Prompt shipment.	Contract second half.
Connellsville district:		
Foundry coke	$2.00 to 2.25	$2.00 to 2.40
Furnace coke	1.55 to 1.65	1.75 to 1.90
Wise county district:		
Foundry coke	2.00 to 2.25	2.00 to 2.25
Furnace coke	1.75 to 2.00	*Sliding [scale basis.
Pocahontas district:		
Foundry coke	2.00 to 2.10	2.00 to 2.10
Furnace coke	1.50 to 1.75	1.60 to 1.75
New river		
Foundry coke	2.50 to 3.15	2.60 to 3.25
Furnace coke	2.10 to 2.15	2.10 to 2.20

*Sliding scale basis means $1.60 for coke based on $9 Birmingham, for pig iron, with an advance of 16⅔ per cent of the amount over $9 at which pig iron is quoted. This is the usual basis. Other forms of sliding contracts are also made.

Finished Material.—Owing to the unsettled state of the market, little is being done, and new specifications are coming forward in a slow and very unsatisfactory manner. Quotations are unstable and show some fluctuation. The open quotations on steel bars today, however, are 1.15c, on plates 1.25c, and on shapes 1.30c, Pittsburgh. While one or two interests are maintaining former prices the general effect has been a gradual trend to the lower quotations.

Old Material.—Sales have been light, and business is slow and featureless. Dealers have considerable stock in yards, and the week's report shows some accumulation. Aside from the usual routine trade there has been nothing of interest transpiring since last report. Prices are said to be about on the same basis, and according to dealers are as follows:

GROSS TONS.

Old iron rails, gross	$14.00 to 14.50
Old steel, rerolling, gross	13.00 to 14.00
Old iron axles, gross	19.25 to 19.75
Steel melting scrap, gross	11.00 to 11.75
Car wheels, gross	11.50 to 12.50

NET TONS.

Old No. 1 R. R. wrought	$12.25 to 12.75
No. 1 machinery	10.50 to 11.00
No. 1 busheling	9.25 to 9.75
Stove plate	7.75 to 8.25
Machine shop turnings	6.50 to 7.00
Cast borings	5.50 to 6.25
Grate bars	7.25 to 8.00
Sheet iron, bundled	8.00 to 9.00
No. 1 cast scrap	10.00 to 11.00
Heavy turnings	7.75 to 8.75

The North Works blast furnaces of the Illinois Steel Co. are being dismantled.

PHILADELPHIA

More Settled Sentiment Prevails—Low Finished Prices—Iron Quiet.

Oct. 2.

Sentiment has become better defined in the iron and steel market in Philadelphia and southeastern territory through a clearer appreciation of the real significance of some of the factors that have been disturbing the trade for the past several weeks. Prices are gradually getting down to the minimum points, but there is still considerable spread between the quotations of different makers and some exceedingly low levels are being touched, as competition is very keen. Some of the eastern mills are running closer to their order books and operations are declining in some cases though mill activities generally are quite well supported by the hand-to-mouth buying policy prevailing. Pig iron is quiet on new business, but a fair movement continues. Prices continue within former ranges. Scrap remains quiet and weak.

Pig Iron.—New inquiry for pig iron this week has been light and conditions are quiet. Sellers report the week to have been the quietest for some time. There continues, however, the small lot buying of eastern Pennsylvania brands, which has been characteristic of the market through buyers keeping their purchases to nearby needs. Stocks on furnace banks are diminishing because of an active shipping demand and the statistics of the Eastern Pig Iron Association and of the Virginia Pig Iron Association are expected to show further reductions at the monthly meetings this week. The leading Virginia pig iron producer came out this week with a price of $12.75 furnace for No. 2, for first quarter. Some prompt Virginia iron is offered at $12.25 furnace, but for last quarter makers are holding to $12.50 furnace. The standard brands of eastern Pennsylvania foundry iron are held at $14.50 furnace. The Pennsylvania railroad is closing this week on its large inquiry for maximum requirements of 15,700 tons of coke and charcoal iron. Owing to the filled up condition of certain eastern and central Pennsylvania furnaces, which usually share heavily in this business the order for coke iron is expected to be distributed among western Pennsylvania furnaces. The charcoal iron will go to northern and southern furnaces. Steel making grades have shown a little movement of late. In basic, some buyers have been filling in nearby needs. One consumer took 3,000 tons and one or two others 1,000 tons or more, making the total sales from 5,000 to 6,000 tons, for early delivery, upon which the inside price was $14.50 delivered. Details are lacking as to a reported sale of a round tonnage of southern basic to eastern Pennsylvania steel works. It is believed in the trade that if such a transaction was made, it was an inter-company matter and, therefore, of no significance, as an open market sale. A block of low phosphorus iron, 5,000 tons or more, has been taken by a western Pennsylvania steel interest from the Lebanon district on the basis of about $16.50 furnace. A Philadelphia buyer continues in the market for 450 to 900 tons of malleable for immediate shipment. Practically all the cast iron pipe companies in eastern territory continue liberal buyers. One of these consumers has recently taken 5,000 tons of southern and northern No. 3 and forge for early shipment and is preparing specifications for another round tonnage. The southern forge on such business has been going around $9.25 Birmingham, and the No. 3 around $9.75, or $13.45 to $13.95 delivered. One pipe maker this week took 1,000 tons of southern 2 to 2.5 silicon iron for prompt shipment at $9.75 Birmingham. A Virginia pipe maker is inquiring for 500 tons. Northern low grade iron is selling at from $14 to $14.50 delivered in this district.

We quote for prompt and last quarter shipment as follows:

No 1X foundry	$15.25 to 15.50
No. 2X foundry	15.00 to 15.25
No. 2 plain	14.50 to 15.00
Standard gray forge	14.00 to 14.25
Basic	14.50 to 14.75
No. 2X Virginia	15.05 to 15.30
No. 2 southern	14.75 to 15.25
Standard low phosphorus	20.00 to 20.50

Finished Material.—Sentiment in the market with relation to those factors which have recently been very disturbing is more settled, as prices seem to be getting down to rock-bottom levels and there is less uncertainty from a buyer's standpoint. Consumers with attractive offerings, however, still make it a point to shop about thoroughly before placing any tonnage and they are usually able to get inside figures, which in some cases are exceedingly low. This is especially true in structural shapes in which lower than 1.40c Philadelphia, or 1.25c Pittsburgh, is said on good authority, to have been done. Lower delivered quotations, in some cases, are at-

tributable to the small freights of eastern mills to this market. Pittsburgh mills are finding it necessary to openly go to 1.25c Pittsburgh to maintain a competitive position on plates and shapes on larger lots.

Hand to mouth buying is being followed by many consumers and because of the small nature of this business the mills are able to get better prices upon it. Eastern plate and shape makers report them doing some business at 1.45c to 1.50c delivered. The nearby requirement buying of the market in various lines continues to direct a very steady volume of orders to makers, but this has not been sufficient to maintain steel works operations in all cases and some declines are reported. This is especially true of companies which depend heavily upon railroad orders. Steel bars are offered at 1.30c to 1.35c Philadelphia or 1.15c to 1.20c Pittsburgh and iron bars at 1.15c to 1.18c eastern mill or 1.22c to 1.25c delivered. Billet business continues in small tonnages. Tin plate is quiet.

Considerable attention continues to be paid to the steel requirements of boat construction along the eastern coast which is now coming out in better volume. Different eastern builders are now figuring on the three or four vessels for the American-Hawaiian Steamship Co., the steel requirements of which, though variously estimated, will probably be 10,000 tons or more. The Harlan & Hollingsworth Corporation has taken a new boat for eastern coast service for the Baltimore & North Carolina Steamship Co., requiring 600 to 700 tons of steel. This builder recently took orders for a boat for the Pacific Coast and one for New England waters, which together require from 1,500 to 2,000 tons. This tonnage has been placed principally with eastern mills. It is reported that another eastern yard has taken six sea-going barges.

Some heavy tonnages of structural steel for building construction are in sight in this market. The Baldwin Locomotive Works is figuring on extensive enlargements of its plant at Eddystone, Pa., which will require 5,000 tons or more of steel. The Lehigh Coal & Navigation Co. will take bids Oct. 9 on an immense power house near Mauch Chunk, Pa., the requirements for which, though not given, will be very large. Revised plans have cut down very little the steel requirements of the municipal convention hall, this city, bids for which are due Oct. 9. The steel estimate continues 10,000 tons or more. Plans are out for the Royster building, Norfolk, Va., 1,000 tons or more, to close Oct. 14. An apartment house for Langham & Co., in West Philadelphia, 300 tons or more, is up. Plans are practically completed for the new stock exchange, this city, and a 12-story building will be erected. A new hotel in Washington, about 500 tons, is ready for steel bids.

The Pennsylvania Steel Co. has taken 560 tons for a span across the Schuylkill river, this city, for the Pennsylvania railroad. The Phoenix Iron Works has 300 tons for a Philadelphia & Reading power house at St. Clair, Pa. The Belmont Iron Works will fabricate 150 tons for extensions to the plant of the Harlan & Hollingsworth Corporation, Wilmington.

We quote, delivered in Philadelphia and vicinity, as follows:

Structural shapes, 1.40c to 1.50c; steel plates, 1.40c to 1.50c; steel bars, 1.30c to 1.35c; refined bar iron, 1.22c to 1.27c; cut nails, $1.75 to $1.80; blue annealed sheets, No. 10 gage, 1.55c to 1.60c; 4 x 4-inch open-hearth rolling billets, $22.40 to $23.40; forging billets, $26.40 to $28.40. Extras shown under Pittsburg report.

Old Material.—The weak condition of prices is not stimulating much forward buying among eastern consumers and further declines are apparently awaited, although old material is now getting down to very attractive levels. Consumers, as a rule, are well supplied with stocks. Trading is very quiet, one eastern mill has been buying old car wheels quite freely, having taken on about 1,500 tons at $12.50 delivered. A lot of 500 tons of strictly No. 1 railroad steel was sold in the week at $12.75 but this is somewhat above the market, which rules from $12.25 to $12.50 delivered. There is little buying in other grades. We quote gross tons delivered in eastern Pennsylvania and vicinity as follows:

Old iron rails	$16.50 to 17.00
Old steel rails (rerolling)	13.50 to 14.00
No. 1 heavy melting steel	12.25 to 12.50
Old car wheels	12.50 to 13.00
Old iron car axles	24.00 to 25.00
Old steel car axles	18.50 to 19.00
No. 1 R. R. wrought	14.25 to 14.75
Wrought pipe	11.75 to 12.25
Cast borings	7.50 to 8.00
Wrought turnings	8.50 to 9.00
Heavy cast scrap	13.00 to 13.50
Railroad malleable	11.50 to 12.00
Stove plate	9.50 to 10.00

Freight rates per ton on scrap from Philadelphia to principal eastern consuming points are: $0.60 to Ivy Rock, Pa.; $0.65 to Phoenixville, Pa.; $0.80 to Coatesville, Pa.; $0.85 to Bethlehem, Pa., Reading, Pa., and Roebling, N. J.; $1.10 to Pottsville, Pa., Lebanon, Pa., and Columbia, Pa., and $1.20 to Harrisburg and Steelton, Pa.

The United Brass & Foundry Co., Detroit, whose incorporation was recently noted, advises that it has at present a force of 15 men and has shops embracing 5,625 square feet of floor space. It has no definite plans for additional building.

Furnaces Not Anxious for This Year's Business, Being Well Sold.

Oct. 3.

Pig Iron.—Sales for the week within the Buffalo district amounted to only a few hundred tons, but prices are firm and the situation shows practically no change. Furnaces are not making special efforts to obtain business as they are well sold up for the remainder of the year, and their views in regard to prices for 1912 are much higher than those of buyers. We quote f. o. b. furnace as follows:

No. 1X	$13.50 to 14.00
No. 2X	13.25 to 13.75
No. 2 plain	13.25 to 13.50
No. 3	13.00 to 13.50
Gray forge	13.00 to 13.25
Malleable	13.50 to 14.00
Basic	14.25
Charcoal	16.50 to 17.50

Finished Products.—Business in general lines is still rather dull with not much demand for bars. The fabricators are still busy with a large volume of small orders. A few larger jobs will soon be ready for figures.

Old Material.—Although a few sales have been made outside the district business is still very dull. The prices here given are largely nominal. We quote gross tons f. o. b. Buffalo as follows:

Heavy melting steel	$12.75 to 13.00
No. 1 railroad wrought scrap	14.75 to 15.25
No. 1 railroad and machine cast scrap	13.50 to 14.00
Old steel axles	18.50 to 19.00
Iron axles	22.00 to 22.50
Car wheels	13.00 to 13.50
Railroad malleable, scrap	13.75 to 14.00
Machine shop turnings	7.00 to 7.25
Cast iron borings	6.50 to 6.75
Low phosphorus steel scrap	17.00 to 17.50
Old iron rails	16.75 to 17.25
Tank iron	10.75 to 11.25
Boiler plate	11.50 to 12.00
Pipes and flues	10.75 to 11.25
Stove plate	12.00 to 12.50
Sheet iron	6.50 to 7.00
Grate bars	11.50 to 12.00

Fair Sized Basic Inquiry and Some Coke Purchases.

Oct. 2.

Pig Iron.—The inquiries for 2,400 tons of northern basic iron and for 300 tons of ferro-manganese, reported previously, have not been closed, but the prospects are good for their resulting in orders before the middle of the week. Market matters in general look somewhat brighter here. Southern No. 2 is still quoted at $10.50 to $11, Birmingham basis, with now and then a rumor that resale

iron can be bought as low as $10. Northern iron is in very little demand at $13 to $13.50, Ironton. Prices for southern iron, delivered, to which the Birmingham freight of $3.75 has been added, follow:

Southern No. 1	$14.25 to 14.75
Southern No. 2	13.75 to 14.25
Southern No. 3	13.50 to 14.00
Southern No. 4	13.25 to 13.75

Coke.—An inquiry is noted in the market for 3,000 to 6,000 tons of foundry coke put out by a local plant, and there is a well-defined rumor that another large concern is asking for 20,000 tons. With this exception, the coke business is about at a standstill, with prices ruling about as follows:

We quote 72-hour Connellsville foundry grades, $1.90 to $2.40 for whole of 1911; 72-hour foundry, $1.90 to $2.15 on tracks and for immediate delivery; 48-hour Connellsville furnace, $1.40 to $1.50; best 72-hour Virginia foundry, $2 to $2.25; 48-hour Virginia furnace, $1.60 to $1.85. The freight to East St. Louis and St. Louis is $2.80, and $2.70 from the Virginia fields when shipment is destined beyond St. Louis.

Finished Material.—There is a fair demand for structural material against specifications and for quick shipment. The contract was let last week for 100 tons of steel to be used in Father Dunn's Newsboys' Home, going to the Victor Iron Works. The market is rather quiet on bars; very little tonnage is being placed, although exceptionally low prices are quoted. There is very little inquiry for standard rails, and orders have been for only small amounts. Track fastenings are in fair demand. The increased activity in the coal trades has brought out small tonnages of light rails, but no business of importance has developed.

Old Material.—Very few transactions were made last week, and there is virtually no inquiry in the market for scrap iron. Prices remain as follows:

Old car wheels	$12.50 to 13.00
Old iron rails	13.00 to 13.50
Rerolling rails (4 ft. and over)	12.00 to 12.25
Old steel rails (2 ft. and under)	10.50 to 11.00
Light section relayers, 45 lbs. and under, subject to inspection	19.00 to 21.00
Relaying rails, subject to inspection	23.00 to 23.50
Frogs, switches and guards	10.00 to 11.00
Heavy melting steel	10.50 to 11.00
Shoveling steel	10.00 to 10.50

We quote, net tons, as follows:

No. 1 R. R. wrought	$10.75 to 11.25
No. 2 R. R. wrought	9.75 to 10.25
Arch bars and transoms	13.00 to 13.50
Knuckles, couplers and springs	9.50 to 10.00
Shafting	13.50 to 14.00
Iron car axles	18.00 to 18.50
Steel car axles	16.00 to 16.50
Locomotive tires	14.00 to 14.50
No. 1 country wrought	9.25 to 9.75
Pipes and flues	7.75 to 8.25
Tank iron and cut boilers	7.25 to 7.75
No. 1 busheling	8.75 to 9.25
No. 2 busheling	6.25 to 6.75
Cast and mixed borings	5.50 to 6 00
Machine shop turnings	6.50 to 7.00
Railroad malleable	9.00 to 9.50
Agricultural malleable	8.00 to 8.50
Stove plate	8.50 to 9.00
Angle splice bars, iron	11.25 to 11.75
Angle splice bars, steel	10.00 to 10.50

NEW YORK

Considerable Basic Sold in East—Sentiment is More Settled.

Office of THE IRON TRADE REVIEW,
1115 West Street Bldg., Oct. 3.

Iron Ore.—Importers of Swedish ore announce that they will increase their annual offerings to this country to 500,000 tons of this ore. This total will include in the next several years, 250,000 to 300,000 tons to be shipped annually under a long-term contract recently made by the Bethlehem Steel Co., and other round tonnages for regular eastern Pennsylvania consumers, but it will still enable some free tonnage to be offered to other eastern furnaces. Reports from abroad show that following the recent announcement of the large purchase of Swedish ore by the Bethlehem Steel Co., European consumers engaged large blocks of this ore, that for German account being especially heavy. Selling of ore in the east at present continues chiefly in jag lots. The mines are not anxious to make forward contracts at prevailing prices.

Pig Iron.—Various reports of sales of basic iron to eastern consumers have been abroad in the market and it is learned on good authority that these transactions during the past several weeks have aggregated from 15,000 to 20,000 tons. One large sale of 5,000 to 10,000 tons for shipment running into first quarter to a consumer in the New Jersey-eastern Pennsylvania district has just been closed and the iron will come from outside territory. A Bridgeport, Conn., consumer, which has been inquiring for 5,000 tons for forward shipment, is reported to have bought 3,000 tons or more from New York state furnaces. A central Pennsylvania buyer has taken several thousand tons of Virginia basic at a price of $12.25, or slightly more, at the furnace. None of the sales were done at below $14.50, delivered, which remains the minimum of the eastern market. A current report of a sale of 8,000 tons of Alabama basic for shipment into Pennsylvania territory is the revival of a quiet transaction made a month or two ago, at $10, Birmingham, or $14.70, delivered. Selling of foundry grades in this territory is not very brisk but the furnaces are now more freely offering iron for first quarter shipment, the leading Virginia interest having announced this week a price of $12.75, furnace, for 2X for that delivery. Buffalo makers continue to sell a fair tonnage for first quarter and the range of prices for prompt or forward delivery in that district is usually $13.50 to $13.75, furnace, for 2X, but below $13.50, furnace, has not been done for shipment after the first of the year. Some prompt Virginia iron is being offered at $12.25, furnace. A New Jersey stove maker, which recently bought 3,000 tons, has purchased an additional 1,000 tons of eastern Pennsylvania foundry iron around $14.75, delivered. A pump manufacturer has closed for 1,000 tons of northern 2X for shipment to eastern plants. The new inquiry is not especially heavy. A New York state stove works is asking for bids on 800 to 1,000 tons of 2X for first half. The Delaware, Lackawanna & Western railroad is inquiring for 650 tons of two grades for Scranton, Pa. A railway equipment maker is out for 500 tons of lower grades for a New Jersey plant and has received quotations under $14, delivered. A Connecticut buyer is out for 2,000 tons of charcoal iron for delivery this year. The best grades of eastern Pennsylvania foundry iron are held at $14.50, furnace, for 2X, though this level is sometimes shaded. The Island Park, Pa., furnace of the Thomas Iron Co. was idle for a day or two the past week, because of a slip, but is again in regular operation. We quote for prompt and last quarter shipment as follows:

Northern foundry No. 1	$15.25 to 15.50
No. 2X foundry	15.00 to 15.25
No. 2 plain	14.50 to 14.75
No. 2 Virginia	15.05 to 15.30
No. 2 southern foundry	14.25 to 14.50
Malleable	15.00 to 15.25
Gray forge	14.25 to 14.50

Ferro-Alloys.—The larger buyers of ferro-manganese who now have inquiries in the market totaling from 4,000 to 5,000 tons, are holding off on their purchases and are declining to pay the recent advances put into effect. All the leading makers, however, are holding firmly at $38.50, Baltimore, for prompt and forward shipment and this level seems to be the established level for delivery after Jan. 1. For early shipment, however, some lots in second hands are still available at lower prices. One sale of 50 tons for Chicago shipment at $37, New Orleans, is noted and reports of small sales at $36.50 to $36.75, Baltimore, in the middle western district are received. On the other hand, sellers report carloads having been done at $38.50, Baltimore. The new inquiry includes 1,000 to 2,000 tons for Chicago and 500 tons

for St. Louis shipment for next year. About 1,500 tons remains pending in the Pittsburgh and Ohio river territory. Buyers of 50 per cent ferro-silicon are also holding off. This market is firm at higher prices, some recent quotations having been on the basis of $60, Niagara Falls. We quote 80 per cent ferro-manganese for prompt and forward shipment, from $36.50 to $38.50, and 50 per cent ferro-silicon at from $58 to $60, Pittsburgh.

Cast Iron Pipe.—The Beaver Construction Co., of this city, submitted the lowest bid this week for the 8,900 tons of 48-inch pipe and 340 tons of valves and special castings for the Brooklyn section of the Catskill aqueduct. Very low prices were submitted for this work, the successful bid being reported to have been about $20.40, delivered, on the basis of the pipe required, which was $1 below the quotation made to the contractors by certain pipe shops, with no allowance of profit to the former. It is reported that the contractor has practically covered for his pipe from one of the eastern shops at a very low price. The 900 tons for Providence, R. I., has been taken by the United States Cast Iron Pipe & Foundry Co. There continues a better volume of business in the market, considerable of which is in private work, but competition is sharp. We quote 6-inch pipe, delivered at New York tidewater, from $21 to $21.50, f. o. b., in carload lots.

Plates.—From 7,000 to 8,000 tons of plates will be required if the city authorities of New York finally decide to carry out the construction of a seven-mile water line from Ten Mile river to provide an emergency supply of water for the Croton water shed. An appropriation for the work has been made and the route approved, but no decision will be reached until Nov. 1, and the supply of water then in storage will determine the city's action. The Wm. Cramp & Sons Ship & Engine Building Co. has taken the order for six all-steel barges for the Lehigh Valley railroad and the 2,000 to 2,500 tons of plates will probably go to eastern mills. Large plate buyers are having little trouble to secure material at 1.25c Pittsburgh, or 1.41c New York, but the lowest open quotation of most plate makers is 1.30c Pittsburgh, or 1.46c New York.

Finished Material.—With the subsiding of the security market to a more normal movement, sentiment in the iron and steel market seems to be calmer and to this extent there is a little betterment this week. Prices, however, remain unstaple, owing to the keen competition that prevails and buyers are displaying no greater confidence in their purchases for the future. The current run of business continues to be largely confined to present needs and the volume of new orders as a result is only fair. The new tonnage booked in September shows considerable shrinkage over that of August, which was an active month. This condition applies equally to the independents and to the United States Steel Corporation. As shipments have been active the unfilled tonnage Oct. 1, will show a sharp decline. With the United States Steel Corporation, this will probably be from 100,000 to 150,000 tons.

Structural lettings in the New York district are less active, but this seems to be due to the unfavorable season for starting new work, as the tonnage that has been placed so far this year has been large. In railroad work, the New York Central has placed 1,050 tons, and the Baltimore & Ohio, 400 tons, with independent shops; the Boston & Maine, 600 tons, for six small bridges, with the Boston Bridge Works. The New York, New Haven & Hartford has also given out about 150 tons. The New York & Long Branch railroad has given 200 tons to the Pennsylvania Steel Co. for a lift bridge. The Central of New Jersey Railroad is taking bids this week on the two large bridges over the Hackensack and Passaic rivers, which will require 8,000 to 10,000 tons. The Buffalo, Rochester & Pittsburgh has taken bids on 1,000 tons of bridge work and is still in the market for 1,086 steel underframes for freight cars. The 1,500 tons for a bridge at Oswego, N. Y., for the New York Central railroad and the 1,000 tons for the Balimore & Ohio warehouse, this city, are still pending.

Other recent awards include 1,200 tons to the Hinkle Iron Works for an apartment at Riverside Drive and 114th street, this city; 650 tons to the Passaic Steel Co., for United States barge office at the Battery, this city; 900 tons to Levering & Gerrigues, for a normal college, on Lexington avenue, between Sixty-eighth and Sixty-ninth streets, this city; 400 tons to the McClintic-Marshall Construction Co. for a loft for Duveen Bros. on Fifth avenue, this city; 200 tons to the Hay Foundry & Iron Works, for the Essex County Bank building, at Newark, N. J. The Albany high school, 500 to 600 tons, is being revised. Plans are out for a terminal warehouse at Syracuse to require 500 to 600 tons. The general contract for the post office at Schenectady has gone to the Durolithic Co., Buffalo, but the steel, 200 tons, is still pending. Wells Bros. have the general contract for the Filene building, Boston, 5,000 to 6,000 tons, but the steel is still up.

We quote for delivery at New York tidewater as follows:

Plain structural shapes, 1.41c to 1.46c; plates, 1.41c to 1.46c; tank plates, 1.41c to 1.46c; steel bars, 1.31c to 1.36c; common iron bars, 1.25c to 1.30c; plates and shapes from store, 1.80c to 1.90c. Extras shown under Pittsburgh report.

Rails and Track Material.—The Atchison, Topeka & Santa Fe Railroad has placed an order with the Illinois Steel Co. for 20,000 tons of open-hearth rails to round out its 1911 requirements. Evidence is occasionally appearing such as in this case to indicate that some of the railroads have carried their policy of curtailment a little too far and have under-estimated their actual needs. The Norfolk & Western Railroad is now preparing its budget of 1912 rail requirements but this interest has not reached the stage for it to be able to fix a definite tonnage on its needs or to issue a formal inquiry. It had been reported in the market that this company was inquiring for 30,000 tons, but an official statement proclaims this to be premature.

Old Material.—The market shows little resistance to the offers of consumers which are on a descending scale and prices continue to decline. The market is strictly in the buyers' hands, but they are not making contracts freely and the volume of trading is only moderate. We quote, gross tons, prices New York dealers will pay at tidewater, with the exception of cast scrap, which has a local demand, as follows:

Old car wheels	$10.25 to 10.75
Old iron axles	17.00 to 17.50
Old steel shafting	14.50 to 15.00
No. 1 heavy melting steel	10.00 to 10.25
No. 1 R. R. wrought	11.50 to 12.00
Iron track scrap	11.00 to 11.50
Wrought pipe	9.25 to 9.75
Cast borings	5.75 to 6.25
Wrought turnings	6.25 to 6.75
Heavy machinery cast	11.00 to 11.50
Railroad malleable	9.00 to 9.50
Stove plate	8.00 to 8.50
Grate bars	8.50 to 9.00

Freight rates on scrap per ton to Steelton, Pa., Columbia, Pa., Pottsville, Pa., and Harrisburg, Pa., are $1.50 from Jersey City and $2.00 from New York; to Coatesville, Pa., Ivy Rock, Pa., Phoenixville, Pa., and Reading, Pa., $1.50 from Jersey City and $1.80 from New York; to Bethlehem, Pa., $1.10 from Jersey City and $1.60 from New York, and to Roebling, N. J., $1.00 from Jersey City and $1.50 from New York.

METAL MARKETS

New York

Oct. 3.

Tin.—Decided improvement has taken place in this market. Prices have advanced materially since Sept. 26, and sentiment regarding both foreign and domestic consumption of tin is improved. The former is considered due to the elimination of weak holders during the recent decline, and support by the syndicate, while the latter is a result of the favorable statistics for September. Spot and October tin is up 2½c per pound in the domestic market, and £11 5s per ton in London, compared with a week ago. The metal closed at 40.25c today in the local market and £184 in London. Future tin rose to £183 5s. Domestic deliveries during September amounted to 4,200 tons, and arrivals to 5,360 tons.

Copper.—Estimates of shipments of copper metal to domestic consumers during September are very much more favorable now than through the month indicated they would be. Well informed sources are expecting a total of about 60,000,000 pounds when the Copper Producers' Association publishes its monthly report. There has been a better demand from both domestic and foreign buyers during the past week and the market has firmed up some. Electrolytic is 12.37½c delivered 30 days, and 12.25c cash New York. Lake is 12.50c with an improved amount of inquiry prevailing. Exports of copper during September aggregate 25,745 tons.

Lead.—There is no change in this market. The leading seller holds at 4.50c for shipment lead, and the independent interests are cutting under that figure where there is a chance to secure business.

Spelter.—Prices are held firm at 6c for shipments to New York and 6.12½c for spot metal. The latter, however, is entirely nominal, as nobody has it for sale.

Antimony.—The market is featureless, except that dealers are offering concessions to attract a demand. Cookson's is 8.25c; Hallett's is 7.70c, and Hungarian is 7c.

St. Louis

Oct. 2.

Lead and Zinc.—A top price of $47 a ton was paid for zinc blende in the Missouri-Kansas-Oklahoma district last week, on an assay base of $44 a ton for 60 per cent ore. The base ranged down to $40, and the market in general was about $1 weaker than during the preceding week, with a decline of from $2 to $3 in some instances. A reported sale of blende and metal to Europe is believed to have caused inducements to holders who have been accumulating large tonnages during the last few months. It is rumored in the district that more than 2,000 tons of blende have been sold for exportation to Europe. Calamine remained quite strong at $24 and $25 a ton for 40 per cent grades, with choice lots selling as high as $32. Lead ore manifested weakness and the bulk of it sold for $58. Some lots sold as high as $59, which was $4 below the prices paid a few weeks ago.

Chicago

Chicago, Oct. 2.

New Metals.—Copper buying was slightly more active last week, but the volume of business is still unsatisfactory and prices show no change for the better. Current quotations for copper are slightly lower, as indicated by the quotations given below. Spelter is somewhat weaker, and no lots have been sold at 5.95c, Chicago, recently. The net result of the week's operations in tin, due to fluctuations in the eastern market, leaves local quotations 2¾c higher. Lower prices are noted for antimony.

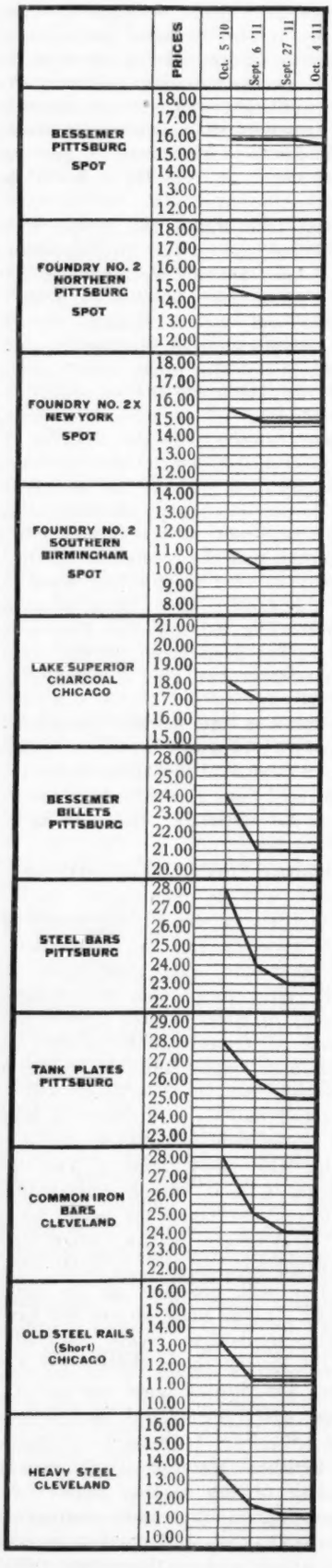
We quote, dealers' selling prices, f. o. b. Chicago, as follows:

Lake copper, carload lots, 12¾c; casting, 12½c; smaller lots, ¼c to ⅜c higher. Spelter, car lots, 5.90c; lead, desilverized, 4.40c in 50-ton lots; corroding, 25c per 100 pounds higher; sheet zinc, $8 list, f. o. b. La Salle, in car lots of 600-pound casks; pig tin, 41¼c. Cookson's antimony, 9¼c; other grades, 8¼c to 8¾c.

Old Metals.—The market was sluggish all last week and prices moved within a narrow range, although lower quotations are noted on several items. Founders and other consumers of old metals continue to buy only according to their immediate requirements.

We quote, dealers' selling prices, f. o. b. Chicago, as follows: Copper wire, crucible shapes, 11c; copper bottoms, 9½c; heavy cut and crucible copper, 12c; heavy red brass, 10c; heavy yellow brass, 8½c; No. 1 red brass borings, 9½c; No. 1 yellow brass borings, 7½c; brass clippings, 8½c; lead, pipe, 4c; zinc scrap, 4¼c; scrap aluminum, 12c; tea lead, 3¾c; No. 1 pewter, 28c; block tin pipe, 38c; tin foil, 33c; linotype dross, 3¼c; electrotype dross, 3c; stereotype plates, 4½c; stereotype dross, 3¼c; prime slab zinc dross, $80 a ton.

PRICE CHART



More Merchant Furnaces Relighted in September

Total Production in September Exceeded that of August by Nearly 50,000 Tons—Fewer Steel Plant Stacks Blown In

September, while having one fewer working day than August, made a heavier production of anthracite and coke pig iron, according to the returns of blast furnace managers. The total output in September was 1,968,595 tons, compared with 1,921,832 tons in August, an increase in September's output of 46,761 tons. The average daily production in September was also larger than in August, being 65,620 tons in September, compared with 61,995 tons in August, an increase in September of 3,625 tons.

MONTHLY PRODUCTION.

	1911.	1910.	1909.
January	1,766,658	2,599,995	1,788,164
February	1,781,285	2,428,937	1,682,470
March	2,165,764	2 583 736	1,822,644
April	2,044,904	2,477,700	1,730,608
May	1,871,388	2,374 802	1,865,757
June	1,773,282	2,282,279	1,930,029
July	1,773,583	2.158.124	2.088,620
August	1,921,832	2,103,791	2,232,642
September	1,968,593	2,048,461	2,375,589
October		2,086,205	2,604,037
November		1,910,385	2,532,740
December		1,779,899	2,682,702
Total	17,067,289	26,840,314	25,337,002

The total output of the merchant stacks in September showed a large increase. The merchant furnaces in September produced 475,137 tons, compared with 438,792 tons in August, an increase in September of 36,345 tons. Non-merchant or steel plant stacks produced 1,472,023 tons in September, compared with 1,464,826 tons in August, an increase of only 7,197 tons.

Further comparison with August's figures shows that more merchant stacks were relighted in September than were operating in August. Eight merchant stacks were blown in during September and two were blown out, making a net gain of six relighted. Non-merchant or steel plant stacks did not show such a gain, six being relighted and two blown out, making a net gain of four; or a total net gain of ten stacks to the active list, both merchant and non-merchant.

The output of spiegel in September was 10,866 tons, compared with 5,173 tons in August, an increase in September of 5,693 tons. The ferro production in September was 10,557 tons, compared with 13,041 tons in August, a falling off in September of 2,484 tons.

AVERAGE DAILY PRODUCTION.

	1911.	1910.
January	56,939	83.871
February	63,617	86,747
March	69,863	83,580
April	68,163	82,590
May	60,367	76,607
June	59,109	76,276
July	57,294	69,617
August	61,995	67,864
September	65,620	68,282
October	.....	67.297
November	.....	63,679
December	.....	57,192

SEPTEMBER PIG IRON.

STATES.	NO. OF STACKS.	NO. IN BLAST LAST DAY OF MONTH.		TOTAL TONNAGE MADE.		TOTALS.	
		Sept.	Aug.	Merchant.	Non-Merchant.	Sept.	Aug.
Pennsylvania	158	90	86	118,546	692,314	810,860	801,777
Ohio	72	41	37	94,634	328,898	423,532	399,285
Alabama	45	19	19	105,914	56,041	161,955	139,395
Virginia	24	8	7	20,600	——	20,600	20,982
New York	27	12	12	58,282	54,615	112,897	118,158
New Jersey	7	0	0	——	——	——	——
Illinois	26	17	16	19,075	181,953	201,028	207,282
Colorado	6	3	3				
Indiana	8	6	6	12,573	132,231	144,804	144,022
Maryland	4	3	3				
Wisconsin	6	2	2				
Kentucky	7	2	1				
West Virginia	4	3	3	31,506	25,981	57,487	58,244
Tennessee	18	7	8				
Washington	1	0	0				
Georgia	2	0	0				
Texas	3	0	0				
Minnesota	1	1	1	14,007	——	14,007	14,473
Michigan	3	2	2				
Missouri	1	0	0				
Spiegel—All states						10,866	5,173
Ferro—All states						10,557	13,041
Totals	423	216	206	475,137	1,472,033	1,968,593	1,921,832

IRON ORE SHIPMENTS

Show Continued Decline—August Will be Record Month.

Iron ore shipments during September were 5,231,069 tons as against 6,273,823 tons for the corresponding month last year, a decrease of 1,042,763 tons. The movement to Oct. 1, 1911, was 24,837,137 tons, as against 35,100,864 for the corresponding period last year, a decrease of 10,263,727 tons. The movement for September shows a slight decrease in comparison with the movement during August of the present year, when 5,548,311 tons were shipped. August will undoubtedly be the record month of the present year.

The fleet last year moved 4,877,441 tons in October and 2,641,886 tons in November, which marked the close of the iron ore season on the lakes. If the fleet moves an equivalent amount during the remainder of the present season, the total shipments for the year would be 32,356,464 tons. However, as shippers expect to be through with outside ships in October, the October and November movements will be light and it is not likely that the movement for the entire season of 1911 will be much in excess of 31,000,000 tons. The total movement for the season of 1910 was 42,620,201 tons.

Following are the shipments by ports:

Port.	Sept., 1910.	Sept., 1911.
Escanaba	705,801	668,595
Marquette	439,442	367,964
Ashland	557,858	368,945
Superior	1,256,665	1,563,836
Duluth	2,041,908	1,131,247
Two Harbors	1,272,158	1,130,482
	6,273,832	5,231,069
1911 decrease		1,042,763

Port.	To Oct. 1, 1910.	To Oct. 1, 1911.
Escanaba	3,868,072	3,086,847
Marquette	2,689,219	1,568,711
Ashland	3,436,829	1,878,786
Superior	6,484,352	7,946,109
Duluth	11,865,552	5,501,364
Two Harbors	6,756,840	4,855,320
	35,100,864	24,837,137
1911 decrease		10,263,727

Henry K. McKarg, president of the Virginia Iron, Coal & Coke Co., the largest maker of pig iron in Virginia territory, has resigned and has been succeeded by John B. Newton, the former vice president and general manager. Henry K. McKarg Jr., has been made vice president and general manager.

DIVIDES INTERESTS

Block-Pollak Co. Succeeded by Hyman-Michaels and Pollak Steel Co.

Announcement has just been made of the division of the Block-Pollak Iron Co., with branches in Chicago, Cincinnati and St. Louis, into two separate concerns. A new company, to be known as the Hyman-Michaels Co. and capitalized at $225,000 has been formed, and will represent the Block interests in Chicago, St. Louis and other branch offices with the exception of Cincinnati. The Pollak interests will have charge of all the property of the old company in the latter city, and will be known as the Pollak Steel Co.

The Hyman-Michaels Co. has taken over considerable property and will assume all the obligations of the old company at Chicago, St. Louis and other branches. Isaac Block will be president, and the other officers and directors will be P. D. Block, Joseph Block, Joseph Hyman and Joseph Michaels. Both Messrs. Hyman and Michaels have been connected with the business for 25 years and are favorably known to the trade. The new company expects to extend its operations largely and arrangements are being made to handle iron ore and pig iron extensively. Considerable equipment will be added and other improvements made within a very short time.

The Pollak Steel Co., which, from this time, on, will have entire charge of the big forge plant at Cincinnati, has been incorporated under the laws of Ohio for $500,000. The officers and directors are: President, E. Pollak; vice president, Maurice E. Pollak; treasurer and general manager, Bernard E. Pollak; secretary, Julian A. Pollak. For many years this plant has turned out large forgings, principally car axles and other railroad forgings, machine and engine builders' forgings, both light and heavy. Its capacity on axles alone has been 4,000 tons per month, and from 1,500 to 2,000 tons of other forgings. The new company is planning extensive improvements. An addition of about 400 feet will be made to the machine shop, and a large number of new tools required, principally saws, lathes, boring mills, slotters, etc. A large hydraulic press will also be installed, and a number of electric traveling cranes. All equipment will be electrically driven and as a consequence the engine and generator capacity will have to be increased.

A testing department for the treatment of steels is being added, equipped with annealing furnaces and all other necessary apparatus. A special brand of heat-treated steels will be put on the market at once designed particularly for locomotive driving axles and forgings, which will meet the requirements of the new specifications recently adopted by the Master Car Builders' Association.

Notwithstanding these changes, it is not the intention to do entirely away with the former Block-Pollak Co. Its corporate identity will be maintained and it goes without saying that the friendliest of relations will exist between the two new companies.

IRON PIPE CARD

Shows Reduction in Black and Galvanized—Differential Changed.

Pittsburgh, Oct. 4. (By wire.)

The new basing card issued this morning by manufacturers of iron pipe, dated Oct. 2, shows a reduction of $2 a ton on ⅜-inch and ½-inch black iron pipe and reductions ranging from $4 to $12 per ton on lap-weld and butt-weld galvanized iron pipe. With the exception of ⅜-inch and ½-inch, prices on other size black iron pipe are unchanged. There is no change in prices on black and galvanized extra strong and double extra strong. The reduction in prices in ⅜-inch and ½-inch black iron and all sizes of butt-weld and lap-weld galvanized iron pipe is $2 a ton less than the reduction on the same sizes of steel, covered in THE IRON TRADE REVIEW a week ago. As a result, the new differential in prices on black and galvanized steel pipe and black and galvanized iron pipe is $10, instead of $8 a ton, as was the case under the former card, the new discount on iron pipe being five points lower ($10 a ton higher price) than on steel pipe. It is announced that manufacturers of iron pipe have discontinued to guarantee in case of decline, although all manufacturers of steel pipe have advised the trade that they will guarantee prices against the new card up to Dec. 31 on all business placed within 60 days of the date of the new card, if a new card is issued.

The Hall-Miller Co., manufacturing surgical instruments, formerly at Chicago, has turned out its first products at the new plant in Marinette, Wis. The instruments are made on punch presses and are of German silver and steel.

PROPOSED REBATES

Of Scottish Steelmakers Not Meeting With Entire Success.

Birmingham, Eng., Sept. 23.

Much more interest has been taken of the proposal of the Scottish Steelmakers' Association to make a rebate to its customers of 5 shillings per ton on all steel bought and received by them after the beginning of July last. The material condition was that this rebate should be paid only to those who confined their purchases to works controlled by the association. English steel makers have been approached with a view to similar measures being adopted south of the border, and a conference is to take place in London shortly. It is not believed that the scheme can succeed. It is naturally disliked by consumers, and there are still enough works outside the arrangement to enable consumers to boycott the promoters of any such scheme. The object is to exclude foreign competition; but it is believed that any rebate less than 15 shillings per ton would be powerless to effect this object. A very strong belief is expressed that the project will be stillborn.

Fine Presentation

Gershom Smith, the retiring comptroller of the Pennsylvania Steel Co., was presented a valuable gold watch and a chest of silver Sept. 30, by the employes of the general offices of the Pennsylvania company including those in Philadelphia, Steelton, Lebanon and Penn-Mary. The presentation was made in the Philadelphia offices and the address was given by President E. C. Felton.

Pittsburgh Foundrymen.—The regular monthly meeting and dinner of the Pittsburgh Foundrymen's Association was held at the Hotel Lincoln, Oct. 2, with W. A. Bole, of the Westinghouse Machine Co. and president of the association, in the chair. W. M. Prall, general demurrage agent, of the Pennsylvania Lines West, delivered an interesting address on "Demurrage in Relation to Transportation," in which he outlined the origin of the demurrage law and the closer relation between transportation companies and the shippers.

The American Nut & Bolt Fastener Co., Pittsburgh, has declared the usual quarterly dividend of 2 per cent.

VENEZUELAN ORE

Properties Acquired by Canadian Concern Now Placing Machinery.

Toronto, Can., Oct. 2.

F. P. Jones, of Montreal, states that the Canadian-Venezuelan Ore Co. has had a staff of engineers in Venezuela for the past 18 months, making extensive examinations of iron ore deposits. As a result of this, the company has acquired two large properties on the Orinoco river, and is now placing orders for machinery for the purposes of thoroughly developing the property.

The change of government that is likely to follow the recent general elections in Canada, will probably result in an entire change in the personnel of the National Trans-continental Railway Commission which has in charge, as a government work, the construction of the eastern section of the Grand Trunk Pacific Railway. Most of the contracts for the construction of the tracks have been let, but there are many pending, including those for buildings, and the incoming administration will hardly allow them to remain in the hands of political opponents. The work of the commission for some years has been strongly criticized by the then opposition in parliament. Hon. S. V. Parent, chairman, and W. S. Calvert, one of the members of the commission, have already intimated their intentions of resigning and the other two members will probably follow their examples.

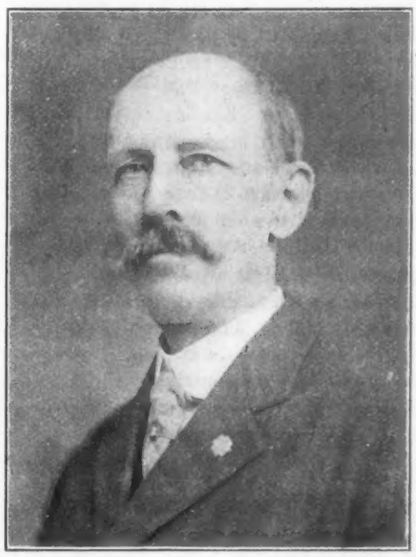
Death of Jos. Leon Gobeille

Joseph Leon Gobeille, patternmaker and engineer, died, Wednesday, Sept. 27, at Niagara Falls, N. Y. About five weeks ago, Mr. Gobeille was severely injured by a fall and he never recovered from the unconscious state, into which he lapsed immediately after being hurt.

Throughout the foundry and engineering trades, Mr. Gobeille was well known for his skill as a patternmaker. Although he specialized in the production of stove plate patterns and always occupied a position in the front rank of those engaged in this line of work, his skill as a model maker encompassed the entire engineering field. To his resourcefulness and ingenuity many of the improvements in modern pattern shop practice are largely due, and he was among the pioneers to apply scientific methods to shop operations.

Possessed of a brilliant mind, he was known among his friends as a wit and was much sought after as an after-dinner speaker. Always a booklover, he was one of the leading spirits in the famous Rowfant Club of Cleveland, and at one time his collection of rare editions was among the largest and best in the country. As a writer, he possessed much skill and his efforts possessed real literary merit.

Of English and Canadian parentage, Mr. Gobeille was born July 2, 1855, at Poughkeepsie, N. Y. His boyhood was spent on a farm at Hyde Park on the Hudson, and during his early manhood he worked in a blacksmith shop. While employed in the erection of the Albany state capitol building, he became interested in carving and designing and soon obtained a position in the pattern shop,



JOSEPH LEON GOBEILLE

operated by N. S. Vedder, where he served his apprenticeship. His schooling was meager and was limited to that afforded by rural institutions in the early days.

As a journeyman patternmaker, Mr. Gobeille came to Cleveland in 1877, where he was given employment by the Cleveland Stove Co. Three years later, he and his brother organized the firm of Gobeille & Bro., which engaged in the manufacture of wood and metal patterns. The venture proved successful from the beginning and the plant was extended from time to time until it was ranked one of the largest jobbing pattern shops in the country. Throughout the various changes in the firm, Mr. Gobeille served as its executive head. As a result of business reverses in 1907, Mr. Gobeille lost his interest and the company passed out of existence. Intent upon rebuilding his broken fortune, he became associated with the Abram Cox Stove Co., of Philadelphia. In 1908, he organized a company which operated a pattern shop at Niagara Falls, N. Y. Immediately after his removal to Niagara Falls, Mr. Gobeille was severely injured in an accident, from which he only partly recovered. Physically impaired, he was unable to devote his usual energy to his business and after closing the plant, he obtained a position with the Buck Stove Co., Brantford, Ont., Can. On Aug. 24, he fell and sustained the injuries which resulted in his death.

Owing to his many accomplishments, being gifted in music, art and literature, he was much sought after socially. Mr. Gobeille was ex-president of the Cleveland Engineering Society and was a member of the American Society of Mechanical Engineers, Rowfant Club, Cleveland Yacht Club and other organizations. He is survived by the widow, whom he married in Cleveland in 1879.

Thos. D. West, an old friend of Mr. Gobeille, in speaking of him, said:

It is a blow for any man, after having struggled from the bottom to establish a good organization and help obtain an enviable business, to find that after prospering well for 20 years or more, he must step out to leave the reins for others. I met Mr. Gobeille a number of times after his failure and often felt like complimenting him on how well he was bearing up under his adversity and the courage he displayed in figuring ahead for another opportunity to embark in business for himself. If he had not been unfortunate several years ago in having injured himself in an accident and been recently otherwise afflicted physically, I feel confident he would have made good in re-establishing himself.

Mr. Gobeille was a brilliant man, very original and a worker, always busy at something. The world is better for his having lived and I know that I am only one of many who were saddened at the news of his death.

Leader's Bouquet

The Cleveland *Leader* says:

THE DAILY IRON TRADE REVIEW, from the Penton press, formerly appearing four times a week as a supplementary bulletin to the weekly IRON TRADE REVIEW, made its appearance yesterday as a full-fledged daily newspaper, and will appear hereafter every business day except Saturday. As a day to day barometer of industrial conditions, the enlarged publication will undoubtedly take place as one of the most valuable class publications designed for the business man's use. It speaks with authority on all matters pertaining to iron and steel and affiliated industries, and the daily edition is a response to a demand from business men for day to day information on the markets and the trend of events in iron and steel.

The municipal water works of Long Beach, Cal., is planning to install new mains to the value of $50,000.

LARGE ORDER

For Steel Pipe Received From Canada by National Tube Co.

New York, Oct. 4. (By wire.)

The National Tube Co. has received an order for 40,000 tons of steel line pipe for the Canadian Western Gas Light, Heat & Power Co. for shipment to Calgary oil districts in Saskatchewan province, Canada, the sizes to run from three to ten inches. This is one of the largest export orders for steel pipe placed in this country in recent years. Other branches of export trade continue active. The Minneapolis Steel & Machinery Co. will fabricate 3,000 tons for the Selkirk Hotel, Winnipeg, for the Grand Trunk Railroad and the Illinois Steel Co. will furnish the plain material. Export rails are active, the Carnegie Steel Co. reporting 24,000 in the past two weeks, practically all for export, including 10,000 for Chile already announced.

Program Announced for Tool Builders' Meeting

Secretary C. E. Hildreth, of the Machine Tool Builders' Association, has announced the official program for the tenth annual convention of the association to be held at the Hotel Astor, Oct. 10 and 11. The first session will be held on Tuesday morning at 10 o'clock and after the usual preliminaries, including the appointment of committees and the reports of officers and committees, the set program will be presented. The topics for discussion are as follows: "Task Work as a Basis of Proper Management," by Henry L. Gantt, consulting engineer, Singer building, New York City; "Shop Hygiene as a Factor in Efficiency," by Winthrop Talbot, M. D., of "Guman Engineering," Cleveland, O., and "Standardization of Machine Tools for the Benefit of the User," by L. P. Alford, editor of *American Machinist*, New York City. On Tuesday evening the publication *Machinery* will tender the visiting members an entertainment in the grand ball room at the Hotel Astor. On Wednesday evening a theater party will be tendered to the party at the Hippodrome by the *American Machinist*.

The Toronto, Hamilton & Buffalo Railway has placed an order for two superheated consolidation freight locomotives with the American Locomotive Co.

Structural Contracts in the East

New York, Oct. 4. (By wire.)

Bids will be taken next Monday on the general contract for the construction of four large loft buildings, which will occupy the site of the present Madison Square Garden soon to be torn down. The buildings will be 24 stories each and together occupy the whole block. The steel requirements are estimated from 20,000 to 30,000 tons. The Lackawanna Steel Co. will furnish about 5,000 tons for the Filene building, Boston, for which Wells Bros. have the general contract.

Personal

E. C. McMillian, mechanical engineer of the American bureau of inspection and tests, has been appointed manager of that concern with office at Pittsburgh, succeeding George W. Greene, resigned.

O. P. Hood, head of the department of mechanical and electrical engineering at the Michigan College of Mines, has been appointed chief mechanical engineer of the United States Bureau of Mines with headquarters at Pittsburgh.

Issac Kinsey, president of the Kinsey Mfg. Co., Toledo, O., maker of automobile parts, was made president of the Toledo Commerce Club at a meeting of the newly-elected trustees of that organization.

E. N. Zern, formerly of the H. C. Frick Coke Co., and the Jamison Coal & Coke Co., has been appointed assistant professor of coal mining in the University of Pittsburgh. H. B. Meller has also been appointed as assistant professor in metal mining.

Prof. Arden B. Holcomb, of Cornell University, and Prof. Joseph H. Cannon, of Purdue University, have been appointed instructors in the electrical engineering department of Carnegie Technical School, Pittsburgh, vice Prof. Hans Riddervold and Prof. C. Eugene Putman, resigned.

Frank Cunningham, superintendent of the Mahoning valley works of the Republic Iron & Steel Co. for the past three and one-half years, has been appointed superintendent of the rolling mills of this company at Lansingville, effective Oct. 1. He will be succeeded at the Mahoning valley plant by H. Steindreder, of the Inland works of that company. On Saturday, Sept. 30, Mr. Cunningham was presented with a cut glass punch bowl, a silver tea service and gold watch and charm by officials and employes of the Mahoning valley works.

Obituary

Byron A. Brooks, a patent expert and inventor, connected with the Union Typewriter Co., Brooklyn, died at his home in Brooklyn, Sept. 28, aged 66. Shortly after his graduation from college in 1871, he invented the Remington No. 2 typewriter and joined the Union company.

H R. Ives, a well-known manufacturer of Montreal, died from penumonia on Sept. 22, aged 78. He was born in Plainville, Conn., and went to Montreal in 1859, where he established the firm of Ives & Allan, founders, the style of the business being afterwards changed to R. H. Ives & Co. Mr. Ives took a keen interest in sporting matters and was an official of the Fish and Game Protection Association of Quebec.

James E. Foley, aged 59, superintendent of the West Detroit department of the American Car & Foundry Co., died at his home, 310 Porter street, Detroit, Sept. 24. Death was due to arterial sclerosis and a general breakdown. Mr. Foley came to this country as an immigrant in 1871, having been married in Ireland just before sailing. He went directly to Detroit and secured employment first with the Michigan Central Railroad in the stationary department. From there he went to the Detroit Car Wheel Co. as a time-keeper, and gradually worked his way up during 40 years of service to the general superintendency of what is now the Michigan plant of the American Car & Foundry Co. His chief asset was his ability to handle labor, and in this respect he was regarded as superior to labor experts by the officials of the car company. Because of this he was offered the general superintendency of all of its foundries, but he declined the offer.

Asks for Bids on Scrap

Pittsburgh, Oct. 4. (By wire.)

The Pennsylvania Railroad Co. asked for bids on 12,000 to 14,000 tons of old material including 5,000 tons of heavy melting steel. Bids must be received not later than Oct. 10. Bids closed today on the monthly scrap list of the Pennsylvania lines west and involved a total of 2,500 tons.

The Pittsburgh & Lake Erie railroad has substituted a 10-hour work day in its shops for the previously prevailing nine-hour day.

Cincinnati's Co-Operative High School Course

How a Public School System Aids in the Training of Boys Desiring to Learn Trades

The industrial schools of Cincinnati take high rank among similar educational institutions of the United States. As Cincinnati is one of the few cities that owns a university, the public school system comprises technical co-operative high schools, a continuation school and a university where all branches of engineering are taught. This is a distinct advantage as the work of one can be made to dovetail into that of the others, and each does its own work without interfering with the work of the others. Coupled with these schools, there are in Cincinnati some of the largest machine tool building plants in the world, which afford unexcelled facilities for the students to take *shop* work in real shops. Not only does this enable the university to save for other needs the investment generally put into school machine shops, but it also enables the student to be constantly in touch with the latest developments in shop practice as well as machines.

In considering the educational advantages afforded by these schools, the high schools should first be taken up, for here the boys are started toward the shop even before they reach the age of 16 years which makes them eligible for apprenticeship. A large part of the residents of Cincinnati are German or are of German descent, and those, who in the past have taken a high school course, have had all the German's love of a classical education, so that the introduction of an industrial and technical course in the public high schools has not been accomplished without some opposition from the conservative element.

The technical co-operative department of Woodward high school, which has just completed its first year, is the latest of the technical courses introduced in the high schools of the city. Frank H. Ball, supervisor of the technical and industrial departments of the city schools, arranged the machine shop, foundry, forge shop, pattern shop and drawing rooms that compromise the industrial department of this new high school. Figs. 1 to 5 ,inclusive, show sections of the machine shop, the forge shop, the wood turning department and the drawing room.

In the machine shop are eleven different types of lathes, together with the necessary planers, drills, shapers, hack saws, etc., to complete the equipment. As far as possible only Cincinnati-made machines are installed. Only heavy, substantial tools of the same capacity and size as those used in commercial manufacturing plants, have been installed. As shown in Figs. 2 and 4, all of the machines are driven by individual motors and all tools are enameled white. Motor-driven machines were installed to eliminate overhead belts and shafting and to familiarize the students with motor drive. The color of the machines is white instead of blue or black, which makes the shop brighter and induces the students to keep their machines clean and free from oil and dirt. The shop equipment includes the following, motor-driven tools:

One 18-inch Bradford lathe.
One 13-inch Willard lathe.
One 14-inch American lathe.
One 14-inch Champion lathe.
One 14-inch Greaves-Klusman lathe.
One 14-inch LeBlond lathe.
One 14-inch Schellenbach lathe.
One 14-inch Van Wyck lathe.
One 18-inch Schumacher-Boye lathe.
One 20-inch LeBlond lathe.
One 24-inch Cincinnati planer.
One 24-inch Gray planer.
One No. 2 Cincinnati miller.
One 18-inch Smith & Mills shaper.
One 20-inch Bickford drill.
One 20-inch Kern drill.
One LeBlond universal cutter and grinder and miscellaneous grinders, hack saws, annealing furnaces, etc.

The pattern and wood turning de-

FIG. 1—THE WOOD-TURNING DEPARTMENT OF THE WOODWARD HIGH SCHOOL, CINCINNATI

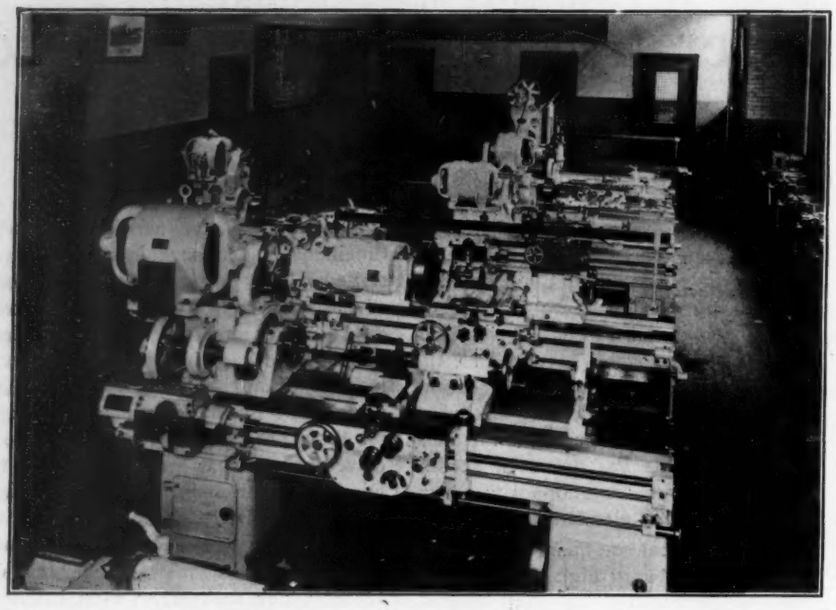


FIG. 2—SOME OF THE MOTOR-DRIVEN TOOLS USED IN CINCINNATI'S SCHOOL SHOPS

partments are equipped with 36 Greaves-Klusman lathes to handle the bulk of the work. The forge shop is equipped with 30 downdraft Sturtevant forges, the blast being supplied from below the floor.

High School Courses.

The Cincinnati High School courses are divided into two groups, the first group including the academic courses which are practically standard for the high schools throughout the country, and the second group which includes the commercial and industrial courses, for both boys and girls. The schedule of work for the four years of the boys' industrial course is as follows:

FIRST YEAR.

	Hours per week
English	4
Arithmetic, algebra	4
Industrial geography	4
Drawing	4
Turning, pattern and cabinet-making	16
Physical training (optional)	2

SECOND YEAR.

	Hours per week
English	4
Applied mathematics	4
Physics	4
Drawing	4
Foundry, forge and machine shop	16
Physical training	2

THIRD YEAR.

	Hours per week
Chemistry	10
English	2
Applied mathematics and shop problems.	10.
Co-operative plan, alternate weeks in shop and school	

FOURTH YEAR.

	Hours per week
Industrial history and civics	5
Shop science and practice	10
Drawing	10
Applied mathematics and shop problems.	10
Co-operative plan, alternate weeks in shop and school	

In the first two years, manual training, forge, foundry and machine shop work are given the student. At the end of the second year, the majority of the boys have reached the age of 16 years and through the assistance of their instructor a job is found for them in some of the various machine tool building plants in the city. During the last two years the boys attend school and work in shops alternate weeks. This is the beginning of the co-operative system of education so fully described later in the university and, which has satisfactorily solved the problem of imparting to a boy both theory and practice.

These high school industrial courses are not designed to teach a special trade, but to teach the students in the first two years the fundamental principles of several trades, to the end that when they are 16, they may choose trades intelligently. In June of the second year, with the advice of their teachers, they make their choice and are located in the various shops. If in September the reports from their foremen are favorable, they continue in the shop and school in alternate weeks; or, if conditions do not permit this, and the boys are obliged to remain at work they receive pay for full time and attend the apprentice continuation school one-half day each week until their apprenticeship is completed. The students receive their scholastic education in school and their trade training in actual shops under commercial conditions.

The subject matter from the first is selected with a view to the student adopting a trade. The subjects are taught in as close relation to each other and to the industrial work as possible without destroying the logical sequence of principles. For instance, while the fundamental principles of art are developed, there is continued application to the practical problems that arise in the shop. Mathematics are closely applied to shop work. Industrial geography takes the classes to the various manufacturing plants in the city, and the material gathered becomes the theme of oral discussion and written description in the class in English composition.

This industrial course is designed primarily for the boy who wishes to learn a trade. No attention is paid to college entrance requirements as

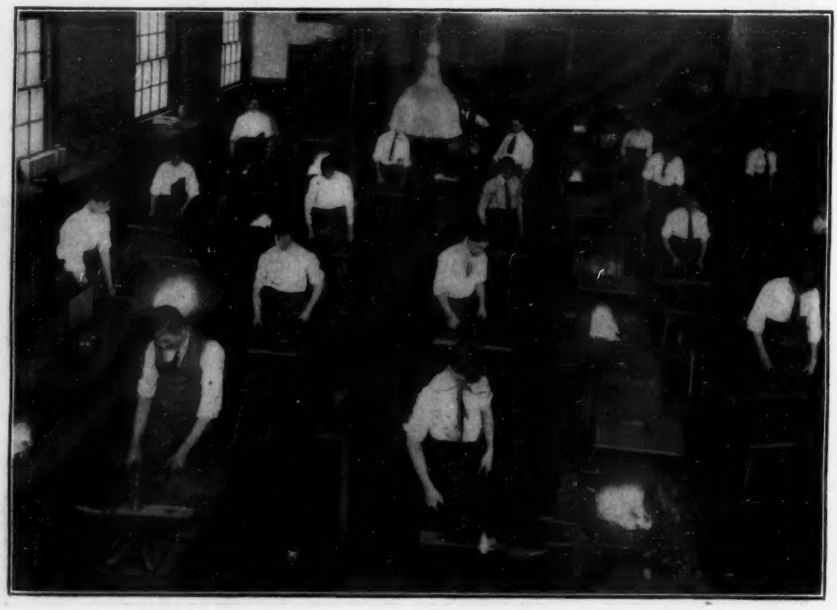


FIG. 3—A CLASS IN FORGING IN THE WOODWARD HIGH SCHOOL

only a very small percentage of all the boys who take this course, enter college. Should a boy wish to enter the University of Cincinnati to complete his technical training, he can, in the last two years, take up such work as will fit him to pass the entrance requirements of the university.

Production of Aluminum in 1910

In a bulletin issued by the United States geological survey, the aluminum production in the United States during 1910 is estimated at 47,734,000 pounds, as compared with 34,210,000 pounds in 1909. With respect to the trade in metallic aluminum, a statement is contained in the bulletin, by Arthur V. Davis, president of the Aluminum Co. of America. This statement is in part as follows:

The volume of aluminum business in 1910 was less than in 1909. In the first quarter of 1910 the demand was good, even better than in any quarter of 1909, but by the end of the second quarter of 1910 business receded to less than 15 per cent of the first quarter and has been gradually decreasing since. The demand for aluminum in steel for the purpose of deoxidizing suffered a net decrease proportionate to the decrease in the steel business. The demand for aluminum castings, which is largely confined to the automobile trade, also fell off in connection with the slump in the automobile industry. As a result of the decline in demand, large stocks of aluminum accumulated and are still accumulating. However, some branches of the business made material progress. The use of aluminum, particularly aluminum tubing in paper, chemical and other similar lines of manufacturing made a steady growth and seems to promise a substantial and large volume of business for the future. The use of aluminum in extruded shapes has also been constantly increasing. Although a new steel rolling mill was built at Niagara Falls in 1910 it was not put into operation on account of the falling off in the sheet business. The aluminum wire and cable business, of course, followed the electrical installation business. There have been comparatively few transmission lines financed and built in the last few years and though there was apparently some activity in 1909, present commercial conditions seem to have checked the revival.

In 1910 the exports of aluminum and of manufactures of aluminum showed a slight increase, being valued at $949,215, as compared with $567,375 in 1909.

FIG. 5—A CLASS IN MECHANICAL DRAWING, WOODWARD HIGH SCHOOL, CINCINNATI

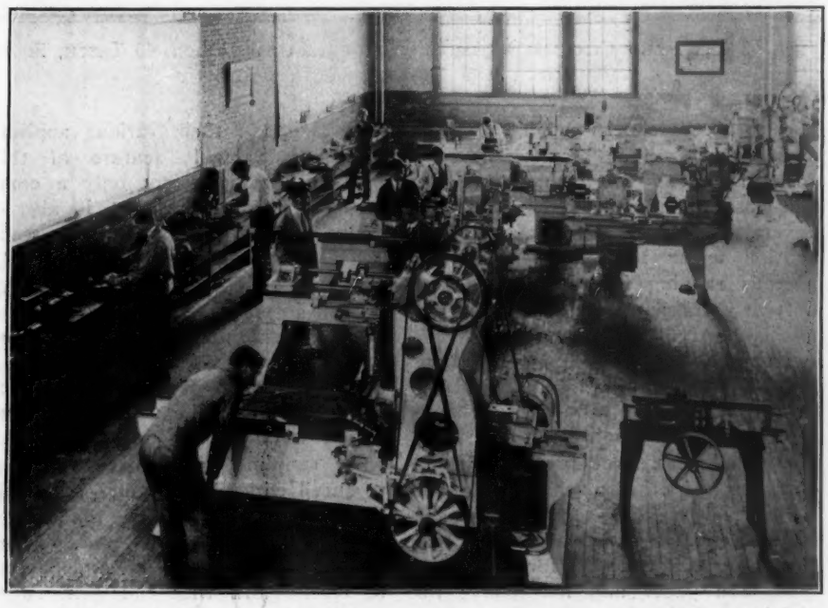


FIG. 4—A SECTION OF THE MACHINE SHOP OF THE WOODWARD HIGH SCHOOL, CINCINNATI

Standardizing Chamfers in Ball Bearings

The question of standardizing chamfers in ball bearings is now being considered by the ball and roller bearing standardization committee of the Society of Automobile Engineers. At the request of an officer of that organization, the New Departure Mfg. Co., Bristol, Conn., has prepared a set of rings and plug gages which, it is claimed, show the advantage of the straight chamfer over the conventional radius type. Ball bearings made by this concern all have the straight chamfer. This set is contained in a velvet-lined, mahogany cabinet and consists of six blued rings and an equal number of blued plugs, all correctly stamped. The plugs represent shafts of standard sizes with reference to the bore of three sizes of bearings and show the various fillets recommended by several ball bearing manufacturers for use in these sizes of bearings. The rings correspond to the inner race or bearing cones of these bearings. Each ring shows two methods of finishing the corner radius of the bearings to correspond with the plugs. A portion of the ring is cut away so that in fitting to the plugs the relation of the chamfer or radius and the fillet on the shaft can easily be observed.

The Westinghouse Electric & Mfg. Co. has declared the regular quarterly dividend of 1¼ per cent on preferred stock, payable Oct. 16.

Cloth Pinions

Cloth pinions are highly successful devices for reducing the noise and increasing the life of power transmission gearing. Metallic gearing, especially steel, is always more or less noisy in operation, the noise becoming particularly troublesome in the case of high speed gear trains. Furthermore, iron or brass gearing has not sufficient elasticity to successfully withstand the shocks or back lash caused by the torque variations incident to the operation of machine tools such as punches, shears, planers, etc. In order to overcome these drawbacks various kinds of non-metallic substances such as rawhide and paper, have been used instead of brass and cast iron for one or more members of gear trains.

FIG. 1—CLOTH PINION, 16 TEETH, TWO PITCH AND 8¾-INCH CLOTH FACE

In the cloth pinions developed by the General Electric Co., Schenectady, N. Y., these defects are entirely eliminated both by the nature of the material and the method of construction employed. The blanks from which the pinions are cut consist of a filler of cotton or similar material confined, at a pressure of several tons to the square inch, between steel shrouds or side plates, the whole structure being held together by means of rivets, or, in case of very small pinions, by threaded sleeves. After the teeth are cut the cloth filler is impregnated with oil. Cloth pinions are entirely impervious to moisture, are unaffected by changes in atmospheric conditions and are absolutely vermin proof.

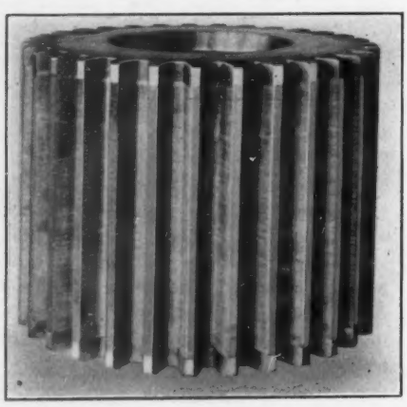


FIG. 2—CLOTH PINION, 31 TEETH, TWO PITCH

The teeth are cut to the 14½ degree involute system according to Brown & Sharpe's standard. Diametral pitch is the standard of measurement, and companion gears should be cut to similar form. The teeth are exceedingly strong and are sufficiently elastic to allow the meshing teeth to bear evenly across the full width of face, thereby enabling the combination to absorb shocks capable of fracturing cast iron or brass. The pinions are self-lubricating, operate noiselessly, and have long life. Of several thousands of pinions in operation under severe conditions for periods ranging from a few months to two years, none has shown any appreciable signs of wear.

Cloth pinions have a wide range of application. They are particularly suitable for use on the shafts of back-geared motors employed for driving lathes, planers, drill presses, shears, punches and other machine tools; for loom and spinning frame drive in cotton, silk, worsted, carpet and textile mills in general; for operating pulp and paper mill machinery; for driving printing presses; and for the valve, ignition and timing gear trains of automobile and other types of internal combustion engines.

Ordinarily, the pinions furnished constitute the smaller members of the gear train, but practically any size and form of gear can be obtained, including a gear of large diameter consisting of a spider with cloth-filled rim.

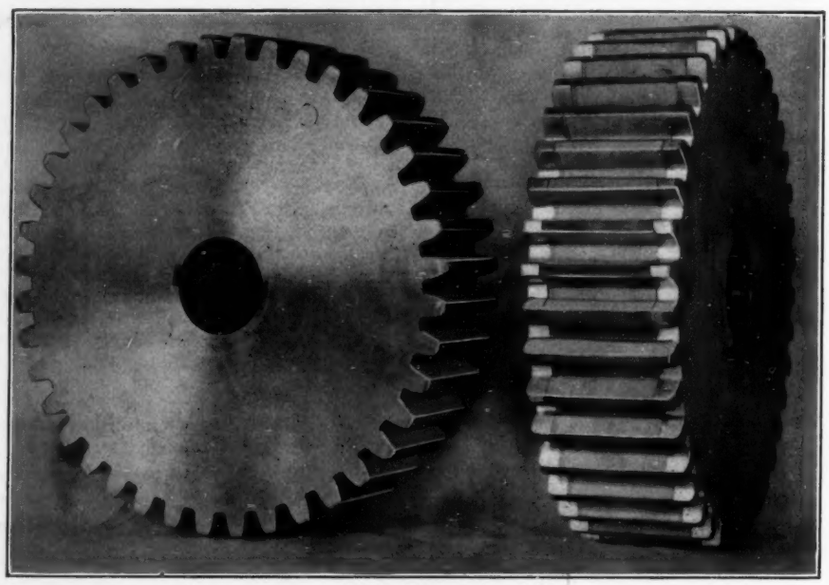


FIG. 3—SIDE AND CIRCUMFERENTIAL VIEWS OF A CLOTH PINION, 40 TEETH, FOUR PITCH AND 2¼-INCH CLOTH FACE

Book Review

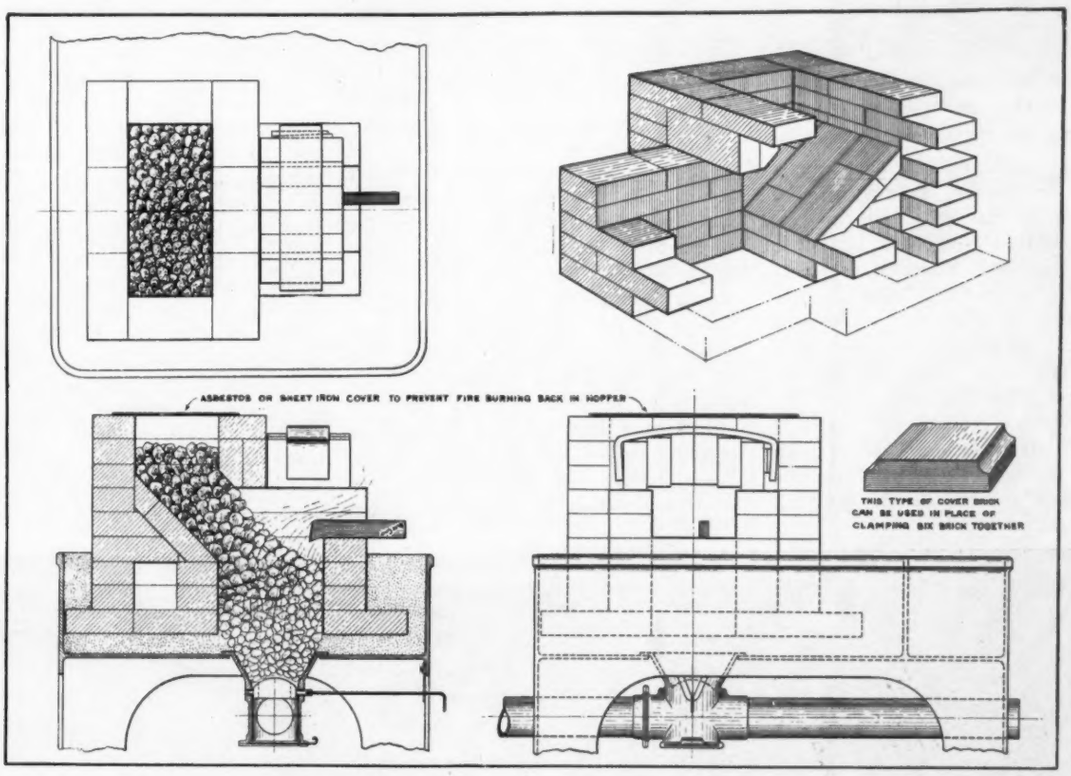
Hawkins Mechanical Dictionary; by N. Hawkins, M. E.; 704 pages, 6¼ x 8½ inches; published by Theo. Audel & Co., New York City, and furnished by THE IRON TRADE REVIEW, Cleveland, for $3.50 postpaid.

This mechanical dictionary is a descriptive wordbook of the meaning and use of terms and phrases currently used throughout the mechanic arts, trades and sciences, including very many of their various applications. A valuable feature of this work is that it is not only a comprehensive dictionary, but is also a cyclopedia of mechanics and technology, thoroughly and accurately compiled. This work contains many tables, formulas, recipes and practical suggestions and a special effort has been directed toward rendering the information given of such practical utility that the work may serve as a trustworthy guide. To this end some simplified rules have been introduced with plain examples of their application. In defining the words, plain mechanical terms and phrases have been used. The book is bound in black cloth with full gold edges and is printed on finely finished paper from large type.

A Tool Tempering Furnace

Sectional views of a tool tempering furnace which can be built with approximately 100 standard fire brick on a tool temperer's forge, are shown in the accompanying illustrations. The advantages of this type of furnace are apparent and it will be noted that a deep, permanent fire is provided; an intensely hot fire can be obtained when required and, in addition, the tool can be subjected to a very short heat in which only the cutting edge or nose of the tool is subjected to a high temperature. As shown at *A*, the fire is deep, below the nose of the tool, and does not burn out as fresh fuel is constantly carried down from the hopper. This insures a good, continuous heat and the tempering operation can be carried on continuously without attention to the fire. To prevent the fire from burning back into the hopper, a section of sheet steel or a sheet of asbestos is laid over the hopper top.

The tool rests on a fire brick with the cutting edge down, which is thus subjected to the highest temperature at the point desired and at the same time confines the heat to the nose of the tool. Either coke or anthracite may be used for fuel. The furnace is cleaned out the same as a forge. No special brick are required in the construction of the furnace and no foundation other than a blacksmith's forge is required. The six bricks that are clamped together to form the top brick should be removable so that they can be readily taken off the furnace when a tool of special shape requires that this be done. This type of furnace has been developed by the tempering department of the Firth-Sterling Steel Co., Pittsburgh, for the benefit of the trade using its "Blue Chip" steel. The furnace can, however, be used to advantage in the treatment of any high speed steel.


ASBESTOS OR SHEET IRON COVER TO PREVENT FIRE BURNING BACK IN HOPPER
THIS TYPE OF COVER BRICK CAN BE USED IN PLACE OF CLAMPING SIX BRICK TOGETHER

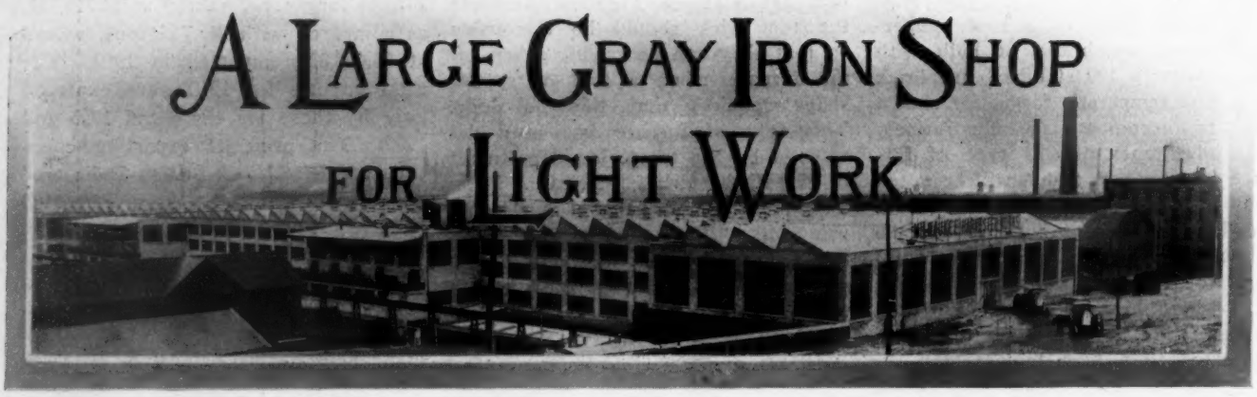
SECTIONAL VIEWS OF TOOL TEMPERING FURNACE

Manganese Ores

A bulletin issued by the United States geological survey places the actual production of manganiferous ores in the United States in 1910 at 619,735 tons as compared with 843,639 tons in 1909, a decrease of 223,954 tons. The Lake Superior region produced over 90 per cent of the total, but as the percentage of manganese in the lake ore is low, running generally less than 6 per cent, this ore was used merely as a source of high manganese pig iron. The prices of manganese ores used in the steel industry vary from $5 to $15 per long ton, according to the grade of the ore, and are governed by a schedule of prices established by the Carnegie Steel Co., Pittsburgh.

The imports of manganese ore into the United States in 1910 amounted to 242,348 long tons, valued at $1,711,131, as compared with 212,765 tons, valued at $1,405,329, imported in 1909. The total imports for 1910 were exceeded only by those for the years 1900 and 1905. The principal exporting countries are Brazil and British India, and important quantities were imported from Russia, France and Germany. The principal use of manganese ores is in the manufacture of iron-manganese alloys, such as spiegeleisen, ferro-manganese, silverspiegel and silico-manganese. The first two of these contain principally iron and manganese and the last two considerable silicon in addition. Ferro-manganese and spiegeleisen are used in steel manufacture as reducers of iron oxide during the final melting, as recarburizers and in the manufacture of special steels alone or in combination with chromium, nickel, tungsten and other steel-hardening metals. Manganese is also used in the formation of alloys with copper, aluminum, zinc, tin and other metals. Manganese ores or manganiferous iron ores are used to a slight extent as fluxes in the reduction of silver, lead and copper alloys.

The Thompson-Starrett Co. has declared the regular semi-annual dividend of 4 per cent on its preferred stock, payable Nov. 15.



Operated by the International Harvester Co.

In the design of large machine shops it has been customary for many years to provide galleries or second floors in the side bays for the installation of light machine tools, thus greatly increasing the effective floor space and the capacity of the shop with no increase in ground area and but little additional expense. Foundry engineers have usually avoided this type of construction, since it is generally considered unsatisfactory to conduct molding operations on any other than the ground floor. There is no real reason, however, why foundries cannot be operated economically using second floors or galleries to increase both the available molding space and the output, provided the facilities for handling materials, including sand, iron, flasks, castings, etc., are adequate and properly designed. After a careful study of the particular problem at hand by the local management, the International Harvester Co. built its new foundry at the Milwaukee plant with a gallery running the full length of the side bay, thus increasing the molding floor area 50 per cent without introducing any difficulties of moment in the operation of the shop. In addition to the gallery in the side bay, this shop has a number of other features of interest, including elaborate sand storage and handling facilities, a carefully worked out system of cranes, hoists, trolleys and surface tracks for the transportation of materials within the plant and well arranged charging floors and iron storage yards.

The foundry produces gray iron castings exclusively and is a recent addition to the Milwaukee works of the International Harvester Co. This plant is an outgrowth of the old Milwaukee Harvester Works, and is now devoted entirely to the manufacture of gasoline engines, cream separators and tractors. The foundry is called upon to make a wide variety of gray iron machinery castings in large quantities. Most of the castings are comparatively light and none would be classed as heavy in modern foundry practice. Practically the heaviest piece made is an engine bed which will not weigh over a ton, while the average casting turned out in the shop does not

FIG. 1—GALLERY MOLDING FLOOR, SHOWING THE MONO-RAIL HOIST OVER THE HATCHWAY

FIG. 2—MAIN BAY OF THE FOUNDRY

weigh over 25 pounds. The new shop is on the west side of the plant, just west of and parallel to the old foundry, which is being converted into a machine shop. Adjoining the new foundry on the west is a city park which limits the space available for the plant. The confined area naturally had an effect on the design of the new foundry and was one of the factors influencing the construction of the side gallery in order to increase the size of the molding floor. The shop is situated at the foot of a side hill so that considerable excavation was necessary in order to obtain a level plot of ground on which to erect the building and gantry cranes. It was necessary to build a concrete retaining wall at the south end of the property where the excavation is deepest.

The building proper is 779 feet long and 150 feet wide, divided into two bays or aisles, each 75 feet wide. The structure has a steel frame and brick curtain walls with a saw tooth, glazed roof. Particular care has been taken in the design of the building to admit an abundance of natural light. The roof is practically all glass and the windows occupy 60 per cent of the wall space.

Figs. 2 and 3 show the interior of the shop and give a clear idea of its general arrangement. The main aisle, 665 x 75 feet, is used for floor molding and for producing the heavier castings. This bay is 40 feet high from the floor to the bottom chords of the roof trusses and the runway for the main cranes is about 34 feet from the floor. The side bay, which is shown at the right in Fig. 2 and at the left in Fig. 3, is also 665 feet long and 75 feet wide and contains a gallery or second floor, 22 feet above the main floor. This gallery runs the full length and half the width of

FIG. 3—MAIN BAY OF THE FOUNDRY, SHOWING THE TRAVELING AND WALL CRANES

FIG. 4—A VIEW OF THE GALLERY MOLDING FLOOR

the building and, therefore, adds 50 per cent to the molding floor area. Fig. 4 shows the general arrangement of the gallery floor, which is used for bench molding, snap flask and other light work. The cupolas are arranged in two groups on the west side of the shop, opposite the gallery, as shown in Fig. 8. Three large sand bins have been constructed on the west side of the building, as shown in Fig. 8. The two end bins are each 114 feet long by 40 feet wide and are used for the storage of molding sand; the middle bin is 209 x 40 feet and is used for the storage and preparation of core sand. Fig. 7 shows an interior view of one of the sand bins. Each bin is 16 feet deep and the floor is about 10 feet below the level of the main floor of the shop and of the storage yard, the roof being, therefore, about six feet above the ground level. The bins are constructed of reinforced, waterproofed concrete with concrete roofs having a slight slope to the west in order to drain off rain water. The three bins have a combined capacity of 15,000 tons of sand. In the roof of each bin are sliding watertight hatches which are opened when the bin is to be filled. A spur track runs alongside the bins so that cars may be spotted conveniently. The middle bin, containing core sand, is equipped with two rotary sand mixers, driven by electric motors.

To distribute the sand economically from the bins to the various points throughout the shop where it is used, a system of tunnels has been built underneath the shop on a level with the floor of the bins. One tunnel, as shown in Fig. 8, runs the full length of the building, directly in front of the bins, while another runs across under the middle of the structure to an elevator

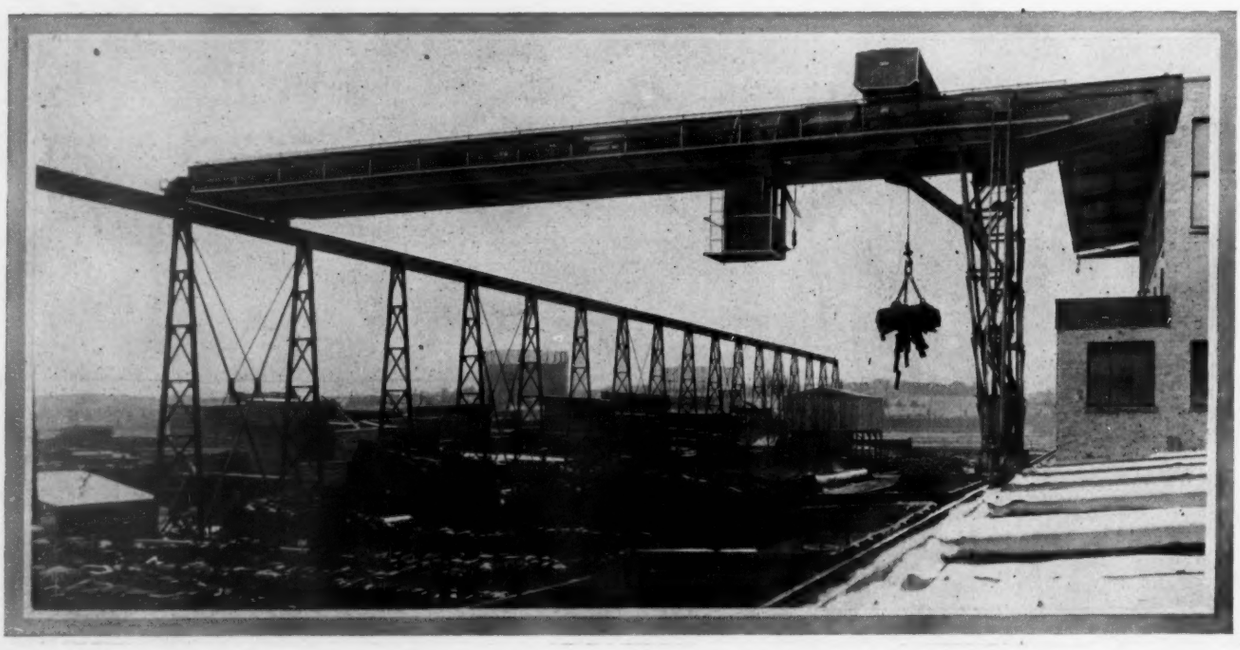


FIG. 5—GANTRY CRANE AND LIFTING MAGNETS IN THE PIG IRON STORAGE YARD

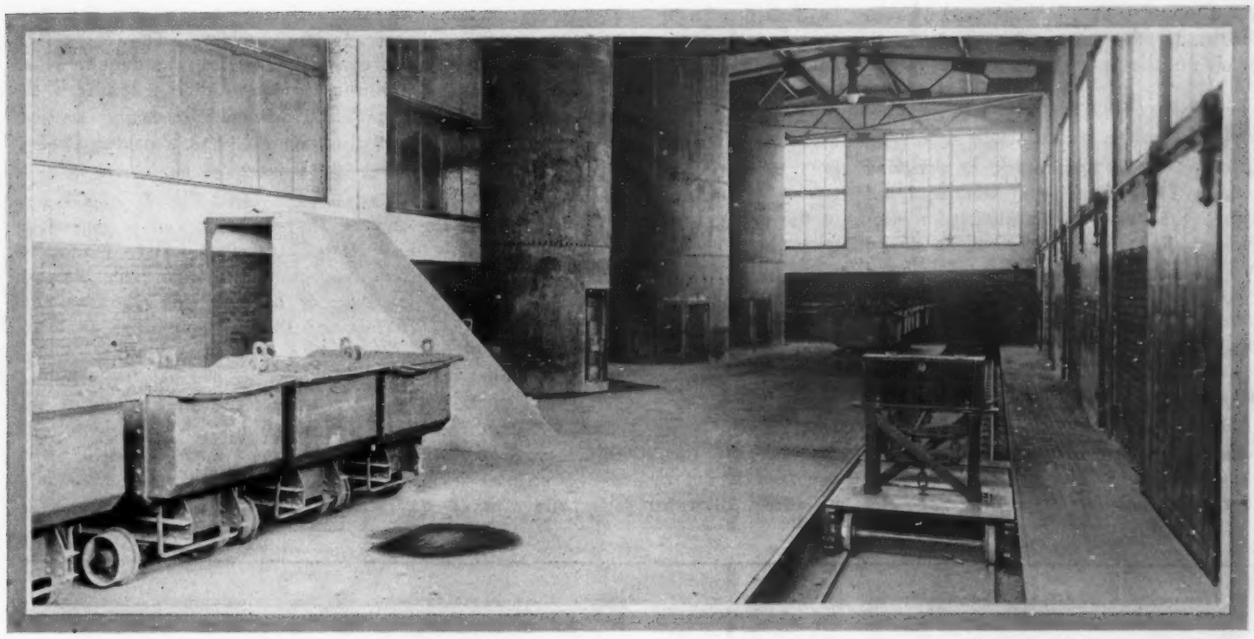


FIG. 6—CHARGING FLOOR, SHOWING THE TRANSFER SCALE AND CHARGING BUGGIES

just within the east wall. The tunnels are provided with 24-inch gage tracks which have turnouts entering each bin and small hopper cars propelled by hand are used to carry the sand. By means of the elevator, either core or molding sand may be conveyed to the second floor or to the side bay on the first floor and distributed. To facilitate the distribution of sand in the main bay, there is a large hatchway at each end of the long tunnel in front of the bins, as shown in Fig. 8. This makes the tunnel accessible by the main traveling cranes and cars of sand can be picked up bodily and dumped at any point on the floor which may be desired. The tunnels are lighted by individual, enclosed incandescent lamps and are carefully drained to keep out moisture.

The economical transportation of materials throughout the shop has been given careful consideration. As shown in Figs. 2 and 3, the main bay is equipped with three 71-foot span, 10-ton electric traveling cranes, built by Pawling & Harnischfeger Co., Milwaukee, and with five, five-ton, Pawling & Harnischfeger electric traveling wall cranes. The cranes travel the full length of the shop. The side bay under the gallery is used for light floor molding and is divided by the building columns into floors, 19 feet wide and 75 feet long. Each of these floors is provided with a light, two-ton traveling crane of 17-foot span, equipped with an air hoist for handling flasks, as shown at *C*, Fig. 2. As shown in Figs. 2 and 3, the runways for these side bay cranes are carried out about 4 feet into the main bay so that connection may readily be made with the main traveler or with the wall cranes. Departments which produce comparatively light castings have most frequent use

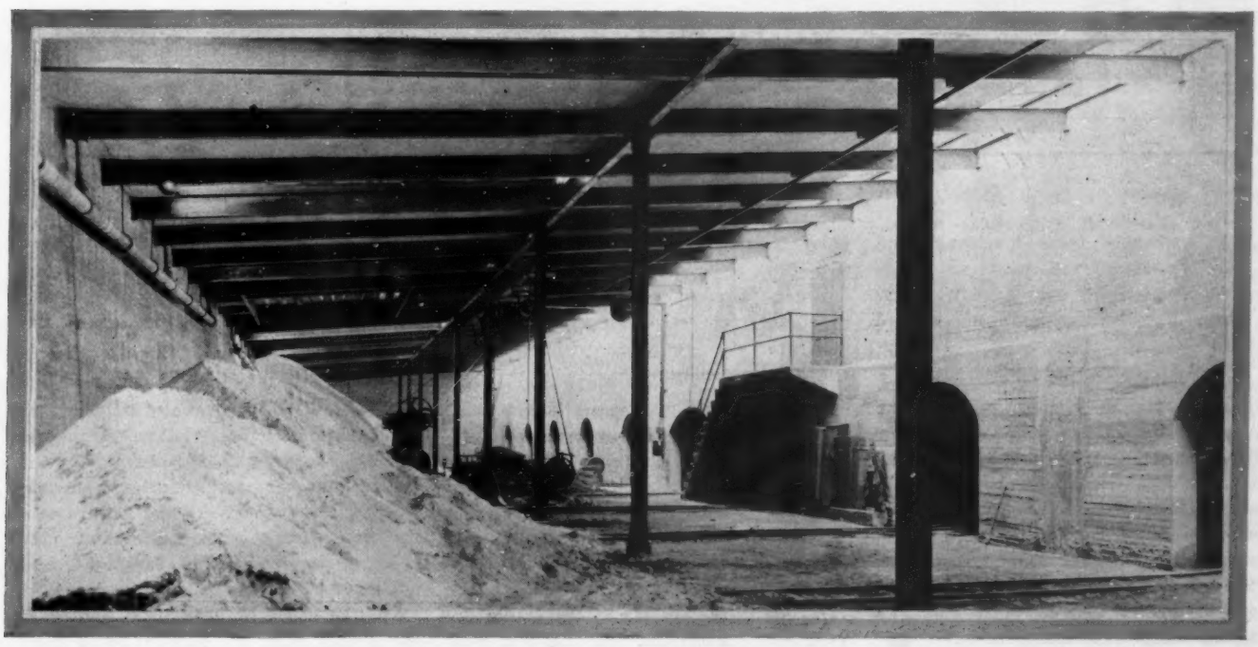


FIG. 7—LARGE SAND BIN FOR STORAGE AND PREPARATION OF MOLDING SAND

for a crane and for this reason each floor under the gallery is provided with its own crane and air hoist.

Gallery Floor.

The gallery, which is used for snap flask and other light work, is provided with an I-beam trolley system, equipped with five Pawling & Harnischfeger electric traveling mono-rail hoists, as shown in Figs. 1 and 4. These hoists are used principally for handling sand and hot metal and for conveying finished castings to the cleaning rooms, which are located at either end of the building.

As shown in Fig. 8, there are two hatchways or shafts cut through the gallery at each end, through which materials may be hoisted from the main floor. Branch loops in the mono-rail system lead over these hatchways and in Fig. 1 one of the mono-rail hoists may be seen poised over a shaft, ready to drop its hook to pick up a load below.

Industrial Railway.

In addition to the overhead crane equipment, the entire plant, including the storage yards, is traversed by a 24-inch gage industrial railway which, with the elevators between the floors, forms a connected, useful auxiliary system of transportation. This supplements the crane service and may be used in its stead in case of necessity.

Crane ladles suspended from the main travelers or the wall cranes are used to distribute hot metal about the main bay when pouring. To convey molten iron to the gallery floor, a system of truck ladles, which may be seen in front of the cupolas, Fig. 2, is used. The tracks on which these truck ladles run lead under the hatchways in the gallery floor so the ladles can be lifted off their trucks by the mono-rail hoists, operating in the gallery and carried to the proper points on the second floor for pouring.

Melting Equipment.

The two charging floors are located on the west side of the building, between the sand bins, as shown in Fig. 8. Each floor is 40 feet wide and 95 feet long, space being provided for three cupolas. At the south charging floor, one 78-inch and two 96-inch cupolas are installed. Blast for each battery of cupolas is supplied by one No. 7½ and two No. 6½ Roots positive pressure blowers. The charging floors are served by a gantry crane spanning the iron yard and are also equipped with elevators for handling material.

The pig iron, coke and scrap may be handled by either of two methods. The gantry crane is provided with lifting magnets which can pick up pig or scrap from the piles and place it directly on the charging floor, and may also be used to handle charges of coke, or the material may be loaded onto trucks, which run on the 24-inch tracks traversing the yard and conveyed to the charging floor elevators. Each charging floor is provided with a movable platform scale, on which the charges are weighed as they come to the cupolas. The bodies of the charging buggies are mounted on trunnions and are nicely balanced so that their loads may be easily dumped into the cupolas, the charging doors being extra large.

The storage yard, Fig. 5, is 800 feet long by 75 feet wide, and is served by two electric traveling gantry cranes of five tons capacity each. The distance from center to center of crane rails is 75 feet and the crane also has an overhang of 12 feet, 6 inches over the charging floors and sand bins. A standard gage track runs the full length of the yard alongside the sand bins and is used for the delivery of cars loaded with sand, coke, pig iron or scrap. In addition to the standard gage track and the gantry crane, the storage yard is also provided with 24-inch gage industrial tracks which reach all points of the yard and connect it with the interior of the shop.

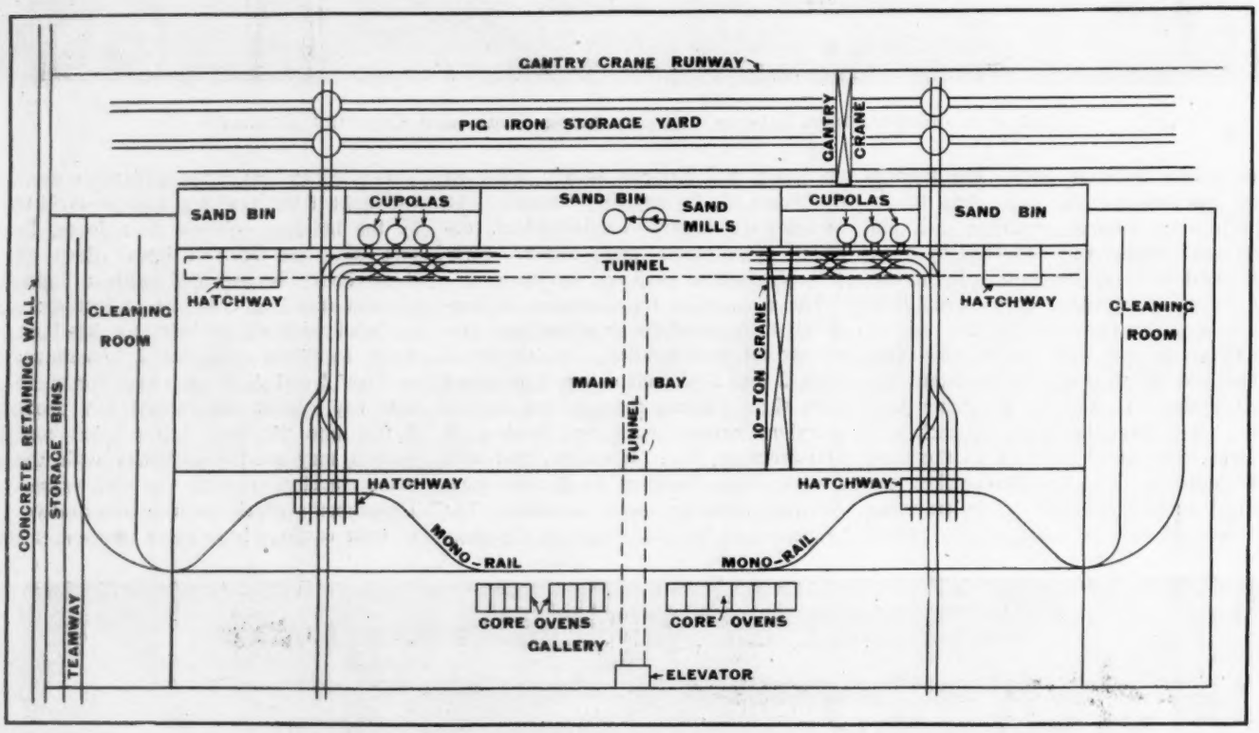


FIG. 8—PLAN VIEW OF THE INTERNATIONAL HARVESTER CO.'S MILWAUKEE FOUNDRY

Core Department.

The core ovens are situated on the first and gallery floors, near the middle of the side bays at a point convenient to the main molding floor and to the elevator connecting with the gallery. On the first floor is one battery of nine Whiting car ovens with cars 5 x 8 feet and another battery of 12 Whiting shelf ovens, arranged in groups of four. On the gallery floor are eight Whiting shelf ovens, arranged as on the ground floor and space is reserved for the

future installation of eight additional ovens. The core room equipment and practice is standard in every respect.

As shown in Fig. 2, the main bay is devoted to floor molding, producing the heavier castings, such as engine beds, fly wheels, heavy cylinders, etc. Solid cast iron flasks are used and practically all the molding is done by machine. The molding machine equipment was furnished by Henry E. Pridmore, Chicago, and consists of rock-over-draw and stripping plate machines, both round and square. The molding practice is standard and presents no unusual features. As suggested above, the side bay under the gallery is used for light floor work on machines and the gallery is reserved for snap flask and bench work. The arrangement of the floors on the gallery is clearly shown in Fig. 1.

There are two cleaning departments, one at each end of the building, as shown in Fig. 8. Each department has two floors, the upper floor being on a level with the molding gallery. Each floor is provided with batteries of motor-driven tumblers. On the first floor, cranes and industrial tracks connect the molding bay with the cleaning room and on the second floor the mono-rail system is used for the same purpose. Elevators connect the first and second floors of the cleaning rooms. At the south end of the building, a row of bins for the storage of small castings is built against the retaining wall and in front of the bins in a roadway connecting the foundry to other parts of the plant.

In the middle of the building, under the gallery, is a mezzanine floor, containing the office of the foundry and locker and wash rooms. Additional locker and wash rooms are located at the north and south ends of the building.

Two rows of 10-ampere flaming arcs, spaced 38 feet center to center and staggered are used to illuminate the main aisle, the lamps being suspended over the cranes, 40 feet from the floor. The side bay under the gallery is illuminated with tungsten clusters, consisting of three 60-watt lamps per cluster. Each cluster is suspended 16 feet from the floor. The gallery is similarly illuminated.

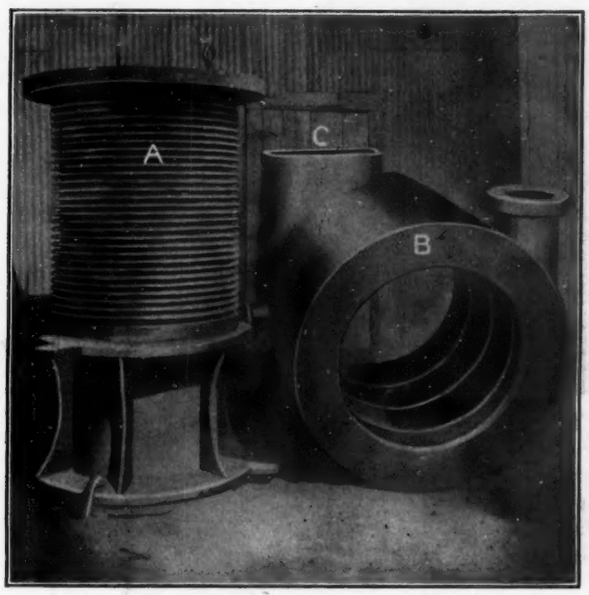


FIG. 1—CHILLER AND OUTER CASING OF MOLD FOR BLAST CHILLED SHEET AND TIN PLATE ROLLS

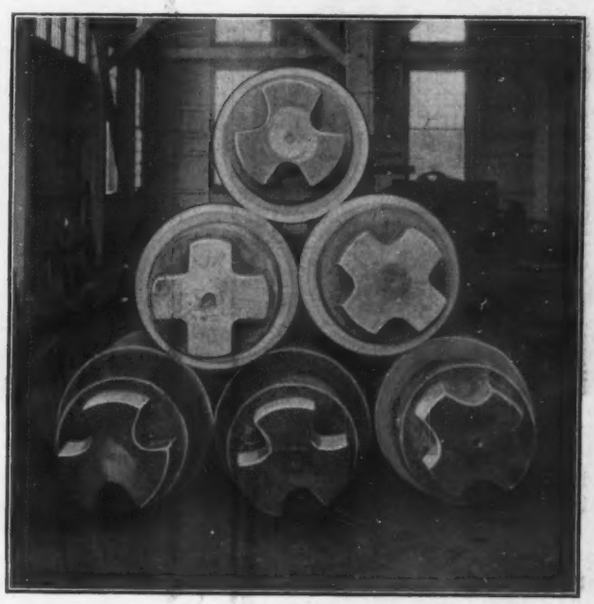


FIG. 2—GROUP OF SHEET AND TIN PLATE ROLLS, SHOWING UNIFORMITY IN DEPTH OF CHILL ON SINKING HEAD ENDS OF THE ROLLS

Blast Chilled Sheet and Tin Plate Rolls

A new method of chilling sheet and tin plate rolls, whereby not only a uniform chill is obtained, but a surface is also imparted to the roll that is equal to that secured by water-chilling and, it is claimed, without any of the bad effects, such as internal strains, has recently been introduced in a foundry in the Pittsburgh district. This new and radical departure in roll foundry practice, which consists of utilizing air blast for obtaining the chill, is being practiced by the National Roll & Foundry Co., Avonmore, Pa., the process having been invented by J. B. Baird.

A water-cooled chill is so constructed that a stream of water constantly circulates through its interior, thereby cooling the chill when the molten metal comes in contact with the surface of the chill. The molten metal is thus instantly cooled on the surface of the roll and thereby chilled. The necks and wabblers are not chilled, but are cast in a sand mold and are left to gradually cool by radiating their heat through the sand surrounding them. There is a considerable difference in the rate of cooling between the neck and the body of the chilled roll and frequently internal strains result. The close-grained surface of water-cooled rolls is very much desired, particularly for the rolling of sheets, as this surface requires less polishing than the surface of a roll otherwise cast.

By the air blast process the rolls are cooled much more rapidly than when ordinary cast iron chills are used, but the molten iron is not chilled as rapidly as by the water-cooled process, and, in addition, the rate of cooling can be controlled by the operator. Thus the blast can be so controlled that the molten metal will set rapidly to obtain a good face on the roll, after which the cooling can be more gradual throughout the body of the roll to eliminate casting strains. In the ordinary chilled roll process the body of a roll is cast in an iron flask or chiller while the necks and wabblers are cast in sand molds. The surface of the chiller is covered with an extremely thin coating of graphite to prevent the metal from adhering to the mold. The heat of the molten

metal is radiated more or less rapidly and the depth of chill obtained depends, to a large extent, upon the nature of the iron used in the mixture. This chill is of a crystalline nature, the crystals forming at right angles to the chilling surface. The chill is extremely hard when formed, but the subsequent heating of the iron mold from contact with the still molten iron in the interior of the mold has an annealing effect on the surface of the roll whereby its hardness is reduced and the close grain originally formed is again opened. In water-chilled rolls this re-annealing effect of the face is prevented by the cool surface of the chill.

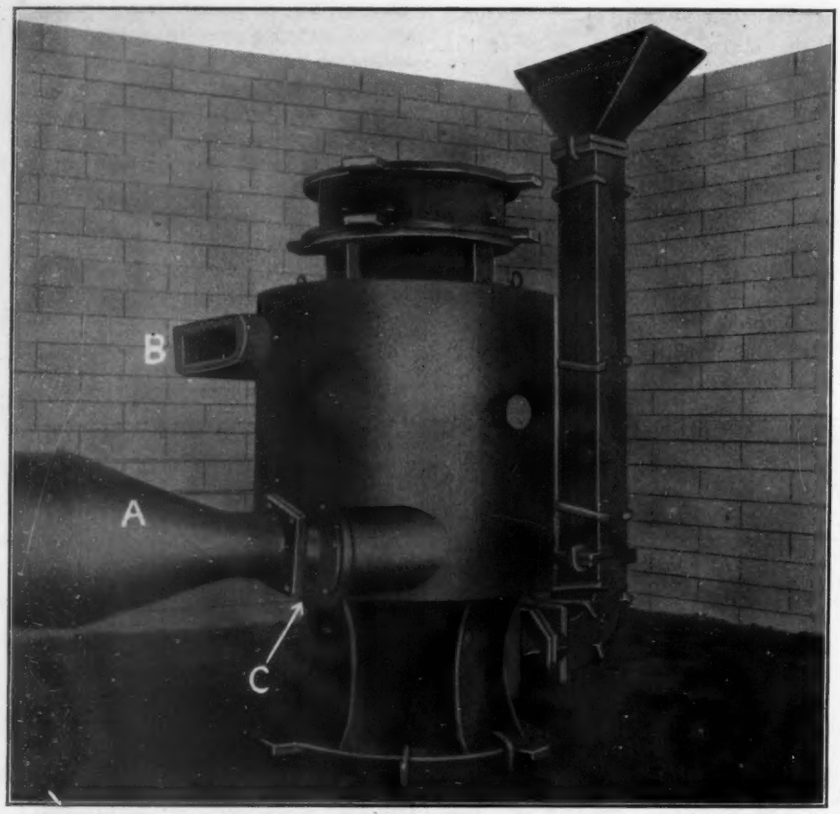


FIG. 3—MOLD ASSEMBLED FOR CASTING BLAST CHILLED SHEET AND TIN PLATE ROLLS

Flask for Blast Chilled Roll.

The flask used for the blast-chilled roll process is hollow and in the space between the outer and inner molds air, under pressure, is continually forced. As the blast pressure can be increased or decreased it is apparent that the rate of cooling can readily be controlled.

In Fig. 3 is shown an assembled flask arranged to utilize the air blast for chilling the face of the roll. The blast pipe through which the blast enters is shown at *A* and the discharge opening for the heated air is illustrated at *B*. To ascertain the amount of heat that is being absorbed by the blast from the mold, a thermometer is placed in the exhaust opening. From this temperature and the blast pressure the temperature of the cooling casting can approximately be obtained. This furnishes a guide to the operator whereby the volume of air is varied, thereby preventing the re-annealing of the face of the mold. The blast pressure is only sufficient to gradually cool the body of the roll, thereby eliminating casting strains. An absolutely uniform depth of chill is obtained, as shown in the group of rolls, Fig. 2. In addition, the face of the roll is also of a maximum hardness for the mixture employed, as there is no re-annealing effect which destroys the closeness of the grain. The blast pipe *A*, Fig. 3, is direct-connected to a large blower capable of furnishing sufficient blast for several molds. The volume of air which regulates the rate of cooling is controlled by the gate valve, *C*. The temperature of the exhaust blast, when considered in conjunction with the pressure of the blast used, is an indication of the speed at which the roll is being cooled.

The section of the mold used as a chiller with its outer casing removed, is shown at *A*, Fig. 1. It will be noted that it is webbed throughout its length, thereby greatly increasing the radiating surface. The outer casing of the chiller is shown at *B*. It will be noted that this casing contains a number of spiral grooves through which the blast must pass before reaching the rectangular opening, *C*, through which the blast exhausts. This insures a uniform distribution throughout the interior of the mold and produces a uniform rate of cooling. A group of sheet and tin plate rolls made by this process are illustrated in Fig. 2. The sinking head ends of the rolls are shown and the uniformity of the chills are unusual, particularly in view of the fact that on this end of the rolls the depth of chill generally lacks uniformity. The exclusive right to manufacture rolls by this process has been obtained by the National Roll & Foundry Co.

The North End Foundry Co., operating a foundry and machine shop at 1535 Port Washington road, North Milwaukee, Wis., has become a corporation. The authorized capital is $35,000. The plant has been conducted by Reinhard and John Koepsell, who continue as chief stockholders.

The Illinois Steel Co., of Milwaukee, with 612 employes, has elected to come within the provisions of the Wisconsin workmen's compensation act. The Elgin, Joliet & Eastern railway has also made a similar election, its 50 employes in Wisconsin coming under the act.

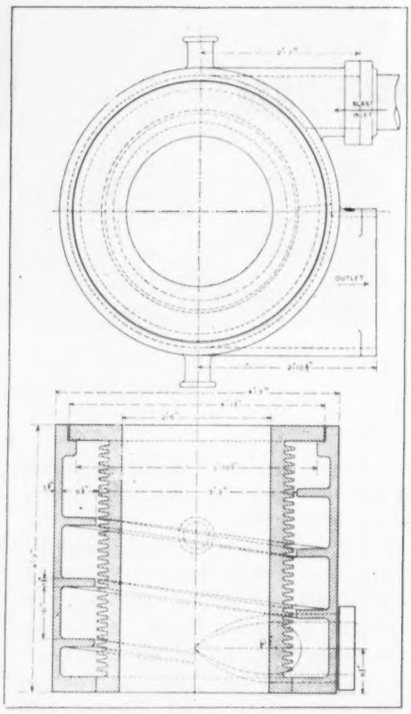


FIG. 4—PLAN AND SECTIONAL VIEWS OF THE FLASK

Machine for Double Head Rivets

A rotary blow riveting machine, equipped with a lower revolving fixture and designed for heading both ends of a rivet in one operation, is shown in Fig. 1. The rivets are headed by a reciprocating hammer, as well as by a rotating hammer held in an anvil carrier which is bolted to the table and between which the articles to be riveted are held. An important feature of the construction of this machine is the combination and operation of the cylinder and hammer rod with the lower revolving attachment. The direct and central application of the power with the positive rotary motion of the hammer results in a regularly applied breaking-down action so that the rivets are turned down uniformly on all sides and perfect heads are always insured. The lower revolving fixture may also be removed and the machine can be used for riveting one end of the rivet only. The machine for heading both ends of a rivet up to ¾ inch in diameter and equipped with the lower revolving fixture, is shown in Fig. 1. In Fig. 2 the lower fixture has been removed from both the machines shown and this strikingly illustrates the largest and smallest sizes manufactured, the former being a ¾-inch machine and weighs about 3,000 pounds, while the small machine is designed for rivets 1-16 inch in diameter and weighs only 300 pounds. These machines are manufactured by the F. B. Shuster Co., New Haven, Conn.

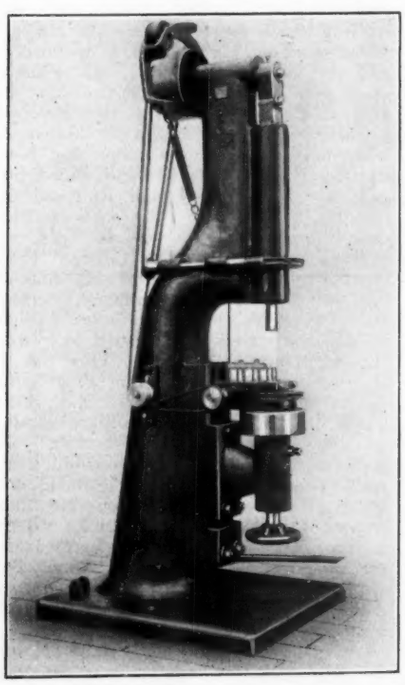


FIG. 1—MACHINE FOR HEADING BOTH ENDS OF A RIVET IN ONE OPERATION

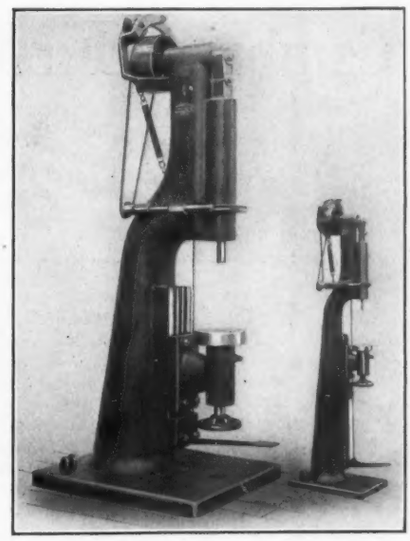


FIG. 2—RIVET HEADING MACHINE, DESIGNED FOR RIVETS ¾ INCH AND 1/16 INCH IN DIAMETER

A New 18-Inch Drill

The Advance Machine Tool Co., Milwaukee, is building a new type of 18-inch drill which is especially adapted for tool room work as it is equipped with a large table, as shown in the accompanying illustration. The table arm is arranged so that the table can be removed and a platen can be adjusted, which is a very desirable arrangement for jig work. The spindle is counterweighted and has a ratchet lever feed with a quick return lever on the opposite side. The spindle travel is 7½ inches and the vertical travel to the table 24 inches. The table can be moved aside to permit of drilling on the base; the distance from the base to the spindle is 39 inches and the greatest distance from the spindle to the table, 28 inches. The length of the spindle, overall, is 27½ inches; diameter of spindle, 1 1-16 inches; diameter of sleeve, 1¾ inches; diameter of column, 4¼ inches, and the table is 11 x 14 inches. A four-step cone pulley is provided, the largest diameter of which is eight inches and the smallest diameter, 3½ inches, while the width of steps is 1¾ inches. The speed of the countershaft is 400 revolutions per minute and the floor space required by the machine is 36 x 18 inches.

California's production of coal in 1910 was 11,164 short tons, with a spot value of $18,336, according to E. W. Parker, of the United States geological survey.

Foundry Course of the Wentworth Institute

The Wentworth Institute, Boston, has established a one-year day course in foundry practice which is designed to teach foundry work to meet the requirements of modern manufacturing. The main building, which includes the foundry, is 145 x 49 feet and five stories high, and the power house is 80 feet square. The aim of the new school is to impart to young men practical instruction which will enable them to enter industrial life from the time of graduation. The courses are designed for those who wish to become skilled and intelligent artisans and also for those who wish to prepare themselves for more responsible positions in mechanical and manufacturing plants.

The course in foundry practice is intended to familiarize the student with every phase of this work and covers all branches of molding and coremaking. The student is taught how to detect defects and remedies are suggested. The shop instruction includes bench and floor molding, experience with the different kinds of facing, open sand work and sweep and machine molding. The shop instruction is supplemented by a series of practical talks and lectures on materials used in the foundry, the selection of sand, the best method of venting, drying, handling of molds and cores.

NEW 18-INCH DRILL, BUILT BY THE ADVANCE MACHINE TOOL CO.

Anniversary of Cambria's First Bessemer Heat

Reunion of Capt. Hunt's "Boys" Who Assisted in Making the First Heat of Bessemer Steel at the Cambria Plant

Pioneer steel workers, who constitute the "Old Guard" of the Cambria Iron Works, Johnstown, Pa., were the guests of their former superintendent, Capt. Robert W. Hunt, at a reunion and dinner, held at the Johnstown Country Club, Wednesday, Sept. 20, which was held in commemoration of the fortieth anniversary of the first blow of Bessemer steel at the Cambria Iron Works, on July 10, 1871. Owing to the extreme heat of the summer months, the reunion was postponed from the date of anniversary. The dinner was attended by a large number of steel workers, who assisted in making the first heat of Bessemer steel at these works.

Capt. Hunt's Address.

The feature of the reunion was the address delivered by Capt. Hunt, which was a historical review of steel manufacture in the Conemaugh valley in the early seventies. Capt. Hunt's address is in part as follows:

It is hard for those unacquainted with the history of Bessemer steel to appreciate that its commercially successful manufacture, and the revolutionary results following it, did not come without great effort and quite a long period of uncertainty.

In 1860, William Kelly came to Johnstown and made some experiments on the pneumatic refining of iron. They were conducted in the cast houses of one of the old blast furnaces on the hill. He obtained some encouraging results. Later he returned to Johnstown and had built the miniature converter, which now stands in the hallway of the Cambria Steel Co.'s main office. This was located near the Cambria Co.'s foundry, and the blast for it was taken from the small blowing engine which furnished the blast to the foundry's cupolas. This was after Bessemer had read his historic paper before the Iron and Steel Institute. Bessemer secured United States letters patent on his process. Kelly afterward made application for a patent, and the United States patent office granted it, leaving it for the courts to decide between Bessemer and himself.

Bessemer Process.

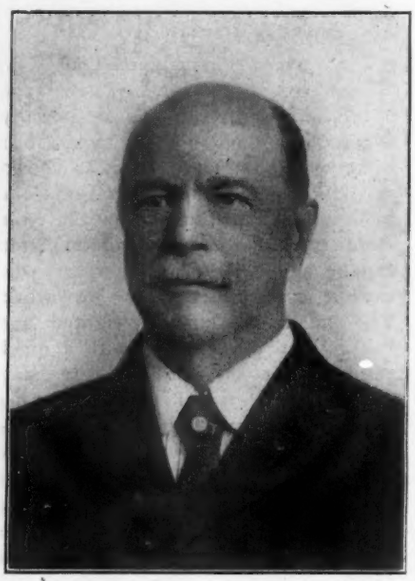
The Bessemer process has been perfected by Robert Mushet's discovery of the beneficial effects of recarbonization and the addition of metallic manganese to the decarbonized metal. This he patented in both England and this country. Bessemer later secured control of the English patent, but Mushet retained the American. Bessemer also took out several American mechanical patents, one of which covered the rotating or tumbling converter.

Later the Cambria company, E. B. Ward, Park Bros. & Co., Lyon, Shorb & Co., and Z. S. Durfee, formed a company, to which Chouteau, Harrison, Valle & Co. were later admitted, which purchased William Kelly's patent and Mushet's American patent. They built an experimental plant in the casting house of one of Capt. E. B. Ward's charcoal blast furnaces, located at Wyandotte, Mich.

Another organization, known as Winslow, Griswold & Holley, secured all of Bessemer's American patents and built an experimental plant at Troy, N. Y.

The first successful American heat of pneumatic or Bessemer steel was made in the Wyandotte plant in the fall of 1864. On Feb. 6, 1865, the Troy plant made its first heat.

On May 1, 1865, the Cambria Iron Co. sent Jacob B. Dunlap and myself, then the chemist of the company, to Wyandotte, to work in the steel plant and learn the business, so that we might be prepared to serve them should they decide to build works of their own. We remained at Wyandotte a year and returned to Johnstown. In the meantime much legal skirmishing had gone on between the Kelly and Bessemer interests, which finally resulted in a consolidation, the Bessemer people receiving 70 per cent and the Kelly people 30 per cent of the stock of the organization.



CAPT. ROBERT W. HUNT

Superintendent of the Cambria Iron Works when the first blow of Bessemer steel was made at this plant on July 10, 1871

All of this took time and added to the commercial uncertainties of the business; at all events, the directors of the Cambria Co. hesitated and delayed action. Daniel J. Morrell was the general manager of the company, and he was fully convinced of the merits and importance of the process, and was very anxious to build works at once, but he was overruled. I remember hearing him say to the Cambria board of directors: "Gentlemen, if you will pay me for my Cambria stock what you know it is worth, I will not hesitate to put it all into a Bessemer plant." This was received by eloquent silence. So time went on, and, following the settlement of the patent controversy, several steel companies were organized and works built.

The Troy people erected a two, five-ton converter plant, making the first blow in it early in 1867. The third plant was that of the Pennsylvania Steel Co., its first steel being made in June, 1867. The fourth plant was that of the Freedom Iron & Steel Co., located near Lewistown, Pa. The fifth, that of the Cleveland Rolling Mill, Cleveland. Oct. 15, 1868, was the date of its first blow. Cambria came sixth, with its first blow, on July 10, 1871.

Railroad Wanted Rails.

The converting works of the Pennsylvania Steel Co. were completed some time before their rail mill, and the Pennsylvania Railroad Co. was very anxious to put some American-made steel rails to actual wearing test in its tracks. The Cambria Iron Co. had some years before put in a steam hammer for the purpose of hammering two puddle balls into one slab for the top of the iron rails, which it made for the Pennsylvania Railroad Co. This was in the endeavor to improve the wearing quality of the rails, a point that was causing much worry, discussion and experimentation. It was not a success, and the hammer was idle. An arrangement was made, by which the steel ingots cast at Steelton by the Pennsylvania Steel Co. were sent to Johnstown and drawn into blooms under that hammer, and then re-heated and rolled into rails for the Pennsylvania Railroad Co. on the 18-inch rail train. Up to that time, hammering of ingots was the universal practice; but George Fritz, chief engineer and general superintendent of the Cambria company, decided that the work could be more expeditiously and cheaply performed by rolling the ingots into blooms. This led to successful experiments on 8¼ - inch square ingots, which were first rolled down to about 6½-inch square blooms on the 18-inch top and bottom mill, then wash-heated, and the rolling into rails completed on the 18-inch mill. From that came the blooming mill. Some of you may recall that, following my return from Wyandotte, I had the oversight of that steel rolling. This work began in June, 1867, and was continued until the completion of the Pennsylvania Steel Co.'s rail mill, in May, 1868, and the rails produced were the first rolled commercially or to order in America.

The Cambria steel plant was begun in 1870, but not completed until July, 1871. Between then and May, 1866,

PIONEER STEEL WORKERS CONSTITUTING THE "OLD GUARD", WHO ASSISTED IN MAKING THE FIRST HEAT OF BESSEMER STEEL AT THE CAMBRIA IRON WORKS, JOHNSTOWN, PA., JULY 10, 1871

when Mr. Dunlap and I returned home from Wyandotte, several changes occurred in the Cambria mill organization. Mr. Dunlap had been a puddler before his enlistment in the army, and the company made him one of the puddle mill foremen. The outlook for the building of the Bessemer plant was so hazy that he was glad to accept, and you will recall that in those days the puddle mill was one of the most important departments of the works.

When the time came to organize the force for the Bessemer works, I received positive orders that I must not disturb any of the existing organizations by taking their skilled men. It is well known that rolling mill men are very prone to want to work in new plants, and, while there was a prevalent belief that the steel works was a doubtful proposition, nevertheless, I had many applications for jobs from all over the works, and the result was the above-named order. George Fritz was very emphatic on the point, and told me to pick out bright young fellows from other than the rolling mill departments. That I selected well, you are the lasting evidence.

The Fateful Day Arrives.

On July 10, 1871, came the fateful day. I was the only one on the job who had ever seen a heat of Bessemer steel made. Such conditions made the work far from easy, but I can truly say that, from that first day until I left the company's employ, in September, 1873, if ever there was a body of men who worked together with the feeling of one for all, and all for one, and everybody for the success of the work, they were the men of the Bessemer department of the Cambria Iron Co.

As I have stated, I left Cambria in September, 1873, and have ever since carried with great pride the handsome watch with which my Johnstown friends presented me as a remembrance of my life among them.

You will recall that at the time of our first steel-making, Cambria's officers were: President, Charles R. Wood; vice president, E. Y. Townsend; general manager, Daniel J. Morrell; assistant general manager, Powell Stackhouse; general superintendent and chief engineer, George Fritz; master mechanic and assistant to Mr. Fritz, William R. Jones; superintendent of blast furnaces, Thomas Collins; superintendent of iron mills, Alexander Hamilton; assistant to him, Charles Kennedy; night superintendent, James Moore; foremen of puddle mills, Barney Ziegler and Jacob B. Dunlap; foreman of machine shops, Daniel N. Jones; foreman of foundry, Benjamin Watkins; foreman of blacksmith shops, Joseph Layton; foreman of pattern shop, Enoch Lewis; superintendent of Bessemer works, Robert W. Hunt; superintendent of blooming mill, John E. Fry.

Cambria Iron Co. Officials.

E. Y. Townsend succeeded Mr. Wood as president of Cambria, and most wisely administered its affairs, and, following his death, Major Powell Stackhouse assumed the office, and we are thankful that he still lives to ably perform the more honorable, but less strenuous duties of chairman of the board of the present much larger and greater Cambria Steel Co.

George Fritz was a giant among men, both in intellect and stature. He could not merely copy any man, and, with his mechanical creative ability, was certain of being successful in his originations. This was made manifest in the design of our Bessemer plant, and, above all, in the blooming mill. That inaugurated an epoch in steel rolling and upon it has been built up the later tremendous output of American mills. His energy and capacity for work was wonderful, and he always said "Come," and not "Go."

Following Mr. Fritz's death, on Aug. 5, 1873, it was quite generally expected by the employes that Capt. William R. Jones would be given his position; but the directors of the company appointed Daniel L. Jones. Capt. Bill at once resigned, but offered to remain until the had completed the erection of the iron trussed roof, which was being erected to replace the burned wooden one over the rolling mills. This was not accepted, and he soon after was engaged by William P. Shinn, president of the Edgar Thomson Steel Co., which was building works at Bessemer, Pa. The record which he later made there for both the works and himself are illustrious pages in the history of American steel-making.

At first the steel at Cambria was made entirely from Lake Superior charcoal pig iron, all of which was purchased by the Cambria company. Later some western mineral coal was used, but a number of years passed before any home-made metal was available. Therefore, in the early days, Cambria's blast furnaces did not play any part.

It is no doubt hard for the Bessemer steel men of today to realize or appreciate the conditions which surrounded our early work. All the pig iron was re-melted in cupolas, and they could only be run for a few hours before the condition of their tuyeres necessitated the dropping of the bottoms. The spiegel was melted in a reverberatory furnace, and it was a slow operation. The tuyeres in the converter bottoms were of uncertain life, and turning down the vessel and blanking them during a blow was a common occurrence. In fact, any trouble which could happen frequently did occur, and we had to fight our way through it. We did fight, and so paved the way for the easier times enjoyed by the steelmakers of today.

We have seen the annual production in the United States of the process which we nursed in its infancy grow from practically *nil* to 12,275,830 tons; the number of works from five in 1871 to 71 in 1910.

We have fought the fight, some of us are still in the conflict with work yet to do, but I am certain that we all feel that in the school of the early Cambria Bessemer days we learned lessons which have been of good service to us, and that we then formed friendships which naught but death could or can terminate.

Those in Attendance.

The steel workers who assisted in making the first heat of Bessemer steel on July 10, 1871, in attendance at the reunion and dinner, follow:

Capt. Robert W. Hunt, superintendent of the Cambria Iron Co.'s plant in 1871, Chicago; Homer McGarvey, Morgan L. Williams, Jas. L. Cramer, David Inscho, Chas. W. Andrews, Smiley Wilson, John Haynes, Peter L. Carpenter, Josh Griffith, R. Emmett Lambert, F. K. Jenkins, Jas. M. Duncan, Thomas McCoy. Wm. Williams, Andy Forrest, John R. Sell, John Horn, Wm. Turner, Sol Lininger, John C. Weir, F. S. Miller,

Frank P. Weir, Wm. Rhodes, Richard Bauers, David Barnhart, Wm. T. Dawson, Amos Walls, Jas. P. Griffith, Johnson Wagner, Wm. Bittner, Jas. M. Dronsfield, Noah Whipkez, Geo. Hamilton, David L. Llewllyn, Evan P. Jones, Jos. Burns, Jno. R. Donaldson, Thomas Kephart, John M. Davis, Charles Ellis, and A. L. Carpenter, Johnstown, Pa.; George W. Gardner, Jonathan Lewis, G. S. Davies and Benj. Stutzman, Braddock, Pa.; Mike Forest, Wheeling, W. Va.; Frank Cramer, Pennsville, Pa., and George Arbaugh, Lorain, O.

Other guests in attendance follow:

David D. Lewis, Philadelphia; Cambria Steel Co. officials and heads of departments, Charles S. Price, president; H. C. Wolle, general superintendent; J. L. Replogle, assistant to president; F. E. Thompson, superintendent Bessemer department; Daniel Stackhouse, assistant general superintendent Bessemer department; F. G. Parker, former superintendent Bessemer department; Geo. E. Thackray, special engineer; H. E. Winger and G. W. Moore, Johnstown representatives of the Robert W. Hunt Co.

Pioneer Steelworkers Unable to Attend.

Regrets were received from the following pioneer steelworkers:

C. Ashby Shomo, Frank Heiner, Kip Bennett, Jack Williams, Geo. Jordan, Richard Bauers, Cyrus Blough, Jos. Storme, Isaac Evans and James W. Wilson, Johnstown, Pa.; Robert Murton, Indiana Harbor, Ind.; Rev. P. Florain, Elizabeth, N. J.; James Stroup, Thomas Lowry and Robert Colbert, Braddock, Pa.; Joseph Abel, Eugene, Ore.; John Northcraft, Placerville, Cal.; John Stanton, Jamaica, N. Y.; Isaac Singer, Wichita, Kans.; Benj. Bair, Lorain, O.; Thomas H. Edwards and S. C. Trawatha, Pueblo, Cal.

Powell Stackhouse, chairman of the board of the Cambria Steel Co., was compelled to send his regrets, as he only recently returned from a long absence in Europe and pressing business engagements prevented him from attending the reunion.

Japanese Iron Ores

While iron ores occur in many parts of Japan, it is a question whether a sufficient quantity to supply the needs of the iron industry in that country, will ever be found. The most important deposit is a magnetic iron ore which occurs at Kamaishi in Rikuchiu. Hematite ore is also found scatteringly in Japan, and one of the most important deposits is that of the Sennin iron mine in Rikuchiu, which is worked by a private company which smelt their own ores.

At this mine there are two small blast furnaces, but only one of a capacity of ten tons is actually in operation. In 1908, 3,000 tons of charcoal pig iron were produced at these mines. Iron sand also occurs in commercial quantities in various prefectures. It is collected and washed in flumes and ditches and is smelted in rectangular furnaces, and pig iron, wrought iron and steel for domestic purposes are made of the product. From this source the yearly average production of the Chugoku district amounts to about 4,500 tons of pig iron, 1,000 tons of wrought iron, and 1,500 tons of steel, but the industry in this district is rapidly declining. The most successful of the Japanese iron enterprises is that of the Kamaishi Iron and Steel Works, which produce about 50,000 long tons of iron, steel and pipes yearly. The ore at the Kamaishi mines is hard and compact, and is conveyed by means of inclines and wire ropes to the foot of the mountain, from which it is transported by a tramway to the harbor, where the blast furnaces are located. Of the blast furnaces, seven produce coke pig iron and ferro-alloys, and one charcoal pig iron, their producing capacity ranging from 10 to 60 tons per day. The ore is first roasted in calcining kilns to make it porous and eliminate the sulphur, and when smelted in the coke furnaces, 1.6 tons of fuel are required per ton of pig iron produced, and 1.5 tons in the charcoal furnace. Manganese ores are brought from other mines for making ferro-manganese and spiegeleisen, and the consumption of fuel amounts to 3.5 tons of coke for one ton of ferro-manganese, containing 75 per cent of manganese, and 1.75 tons of coke for one ton of spiegeleisen containing from 15 to 20 per cent manganese. The consumption of limestone is at the rate of between 10 and 30 per cent of the iron ore charge, according to the composition of the slag desired. The composition of the No. 1 Kamaishi coke pig iron, as shown by analysis follows: Graphitic carbon, 2.85 per cent; combined carbon, 0.62 per cent; silicon, 2.82 per cent; phosphorus, 0.13 per cent; sulphur, 0.02 per cent, and manganese, 0.40 per cent. No. 1 charcoal pig iron contains, graphitic carbon, 2.46 per cent; combined carbon, 0.74 per cent; silicon, 2.18 per cent; phosphorus, 0.13 per cent; sulphur, 0.02 per cent; copper, 0.25 per cent, and manganese, 0.35 per cent. The coke and bricks used by the blast furnaces are all manufactured at the works. There are 181 coke ovens of the retort type and 30 beehive ovens. In making the coke, several kinds of coal are mixed, and crushed in disintegrators, and are then charged into the ovens without washing. The refractory materials that are used are of excellent quality, the silica brick being made of ganister rock found in the vicinity, while the clays are brought from clay lands owned by the mine.

"Forty Years Ago"

*By Griffith S. Davies**

A jolly set of old-time friends have gathered here today,
The faces are familiar, but the hair is getting gray;
For time and circumstances change all things down here below,
And also old steel workers of forty years ago.

We've gathered here from near and far, each other's hand to shake,
And mutually refresh the mind for old acquaintance sake,
Some left our ranks, achiev'd success; steel working was too slow,
Though wealthy, are as chummy yet as forty years ago.

I'm happy to be here today, I know that you are, too,
To meet and greet the remnant left of Capt. Hunt's old crew.
The nods and broad smiles and hearty shakes between Jim and Jack and Joe,
Familiar recollection wakes of forty years ago.

On July 10th of 'seventy-one, erected and complete,
The Cambria Bessemer steel plant made its initial heat.
'Twas Capt. Hunt who had full charge to superintend and blow,
Who filled the bill successfully just forty years ago.

And who was Capt. Hunt? perhaps you've heard some one inquire.
He was the only man that day, the man we all admire.
He took us green and ignorant who never saw a blow,
We followed his instructions; that was forty years ago.

We put the cupola in blast and got the iron out,
Weigh'd and pour'd it down the trough into the vessel's snout.
Spectators crowded all around to see the first heat glow.
"Pell mell" they went when it turned down just forty years ago.

The steel as specified for rails must be both tough and hard,
And if it did not fill the bill it never left the yard.
Where'er you saw those rails laid down, if stamped C. I. Co.,
Were O. K., as were specified just forty years ago.

The composition of the crew was also hard and tough,
But not in a degraded sense could we be counted rough.
"Hard" work we never whimpe'd at if up, or down below,
And "tough" as hickory, you can bet, just forty years ago.

Why, yes, we old steel workers have a warm spot in our hearts,
And pray that Capt. Hunt receive the blessings God imparts.
Long life, good health, and happiness wherever he may go;
'Twas his delight to treat us right just forty years ago.

My final wish that all may have the best this world can give
To recompense your faithfulness as long as you may live.
Should we be spared, and all goes well, another year or so,
Let's rally up, old yarns to tell, of forty years ago.

*The author of this poem was one of Capt. Hunt's "boys," who assisted in making the first heat of Bessemer steel at the Cambria Iron Co.'s plant.

Design of a 30-Ton Induction Electric Furnace[1]

How the Calculations Were Made and Dimensions Obtained from the Available Data of a Five-Ton Furnace

By Albert Hiorth

The design of this furnace has been based upon the data and results obtained with the original 5-ton furnace in Jossingfjord, Norway. As the step from 5 tons to 30 tons is a rather large one, it was necessary to carefully study beforehand the different factors determining the design. The two most important things to be determined were the power factor, and the energy required to keep the charge at the working temperature.

The power factor depends almost exclusively upon the design of the furnace and the periodicity of the supply. With a given resistance in the bath, a certain current is necessary to produce the required temperature. As the bath consists of only one turn round the magnet, the secondary current is equal to the primary current multiplied by the number of primary turns per leg.

The voltage required to pass this requisite current through the primary winding may be divided into two component parts, one required to overcome the ohmic resistance, and the other required to overcome the inductive resistance. These two factors determine the power factor of the furnace. With a given inductance the power factor increases together with the resistance, and with a given resistance the power factor decreases as the inductance increases.

The total resistance may again be divided into three parts: First, the primary resistance which represents the loss in the primary coils; second, a very small part representing the loss in the iron core; third, the secondary resistance representing the resistance of the bath, which may be termed the useful resistance.

Useful Resistance.

This useful resistance depends upon the following three factors: The conductivity of the iron at the working temperature of the furnace; the skin effect and the dimensions of the bath. The first of these factors will be dealt with later; the second, the skin effect, can be neglected for our purpose, as it may safely be assumed that its effect upon the total resistance will be the same, even if the sectional area of the bath is altered considerably.

The third factor, the dimensions of the bath, is, of course, the main one. If the skin effect is neglected, the resistance increases proportionately with the length of the bath, and decreases proportionately with the sectional area.

With a given periodicity the inductance depends upon two factors: First, the magnetic resistance, that is, the reluctance of the iron core; second, the magnetic leakage between the primary windings and the bath.

The first of these may be neglected, as the magnetizing current of the furnace without any charge is very small.

The second one, the magnetic leakage, depends upon the total flux which passes around any one of the windings (the primary winding and the bath) without also passing around the other; in other words, upon the total flux which escapes through the annular spaces between the two windings.

If the radial width of both the bath and the primary coils remains the same, this flux is practically proportional to the total area of the space between the winding and the bath, and if the distance between these two be not altered, the flux is proportional to the circumference of the bath.

Inductance.

Consequently the inductance will increase with the diameter of the coils; if at the same time the radial width of the bath be increased, the inductance will be somewhat reduced again, but not nearly proportional to the increase in the width.

The inductance is also, of course, proportional to the periodicity, and may be lowered by using a lower periodicity. The influence of this will be discussed more fully later.

The design of the present furnace is

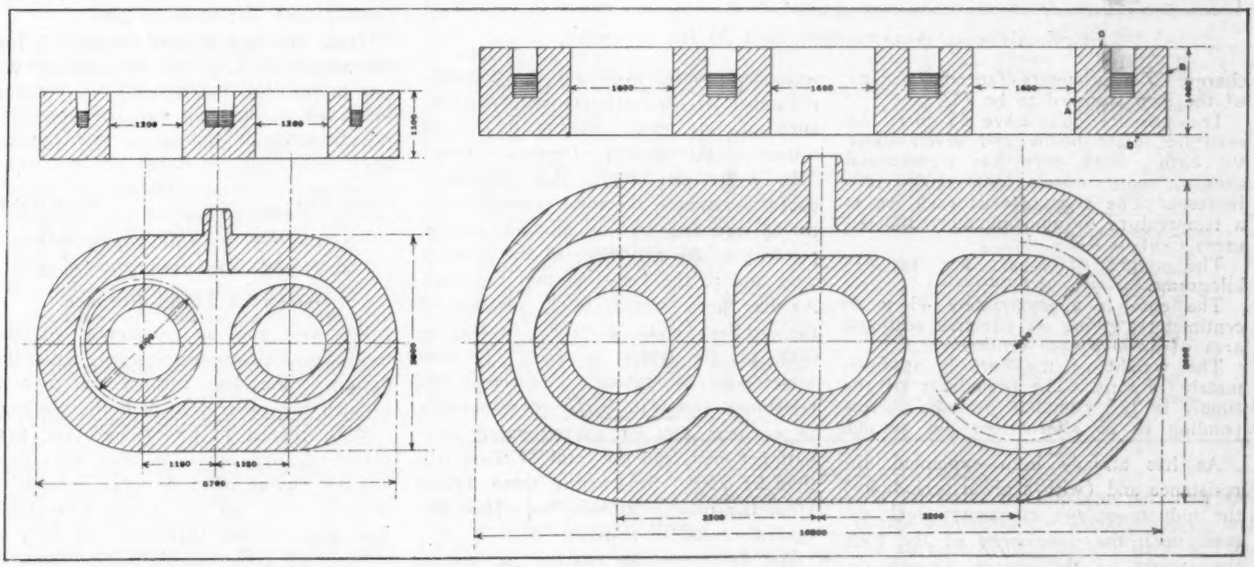


FIG. 1—PLAN OF A 10-TON FURNACE; THE DIMENSIONS ARE IN MILLIMETERS

FIG. 2—PLAN OF A 30-TON FURNACE; THE DIMENSIONS ARE IN MILLIMETERS

[1] A paper presented at the Toronto meeting of the American Electrochemical Society, Sept. 21-23.

shown in Fig. 1. The data for the furnace are the following:

Mean diameter of the annular space occupied by the bath, 2.1 meters.

Width of this space, 20 centimeters.

Depth of the bath with a five-ton charge, 27 centimeters (specific gravity of the iron assumed to be 7).

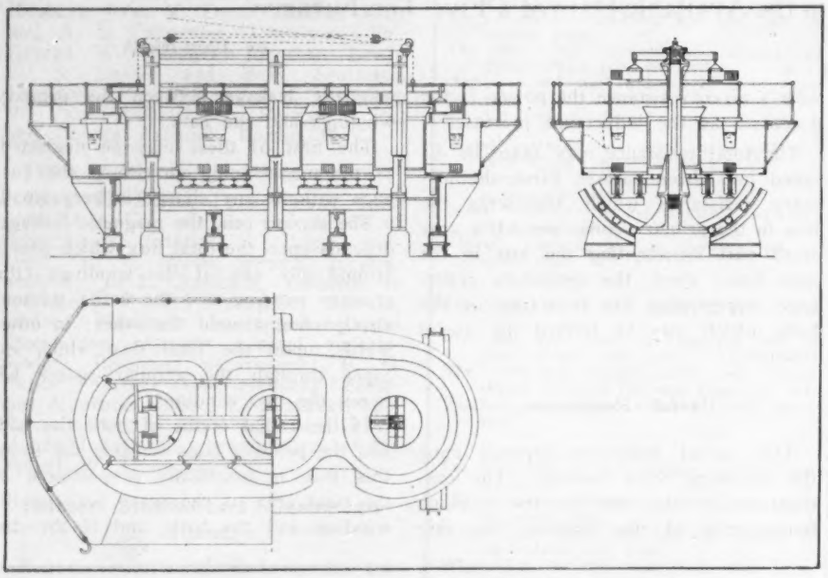


FIG. 3—GENERAL ARRANGEMENT OF A 30-TON FURNACE

The primary coils have 15 turns on each leg, eight below and seven above the bath. Each turn has a sectional area of approximately 1,000 square millimeters. The resistance of each leg at a temperature of approximately 180 degrees Cent. is 0.003 ohm.

The weight of copper per leg, 840 kilograms.

The core is approximately 40 x 50 centimeters, giving an effective sectional area of 1,800 square centimeters.

The weight of the core is approximately 15 tons. The periodicity of the supply is 12.5 complete periods, corresponding to 25 alternations per second.

As has already been explained, the resistance and (with a given periodicity) the inductance, are constants which depend upon the dimensions of the bath, the weight of the charge (which depends upon the sectional area of the bath) and upon the disposition of the primary coils relative to the bath.

Resistance.

Considering the resistance first, this should, in accordance with the above theory, remain the same as long as the weight of the charge is the same. Apart from the variations caused by the adding of fresh material to the bath, there is, however, a marked decrease in the resistance as the process progresses; whether this is due to the alterations in the chemical composition, or whether the conductivity after a certain temperature has been reached, begins to increase again with a further increase of temperature, cannot be stated definitely without further investigations.

If we consider only the resistance at the end of a run or at the beginning, before fresh material is added, we obtain the figures for the resistance from the reports analyzed, shown in Table I.

The last column in Table I gives the equivalent useful resistance, or the total resistance of the bath (twice the resistance of one ring) multiplied by the square of the number of primary turns.

In order to obtain this equivalent useful resistance, the total resistance has to be reduced by an amount corresponding to the resistance of the primary coils and to the losses in the iron core. As has been stated, the resistance of the primary coils is 0.003 per leg, or 0.006 for the whole furnace. The iron losses may be taken to represent the resistance equal to 0.002, corresponding to an iron loss of approximately one-half per cent, and the total of these will thus be 0.008. Subtracting these figures from the total resistance, we obtain the equivalent useful resistance.

As the resistance varies in inverse proportion to the sectional area, the curve showing the relation between the sectional area and the inverse value of the resistance should be a straight line.

In figuring the actual resistance, one obtains the specific resistance of the molten iron equal to 1.4 ohms per square millimeter cross-section and meter length. In handbooks the value given is somewhat higher, and even as high as 1.7. The discrepancy may be due to inaccuracies, which are quite unavoidable, considering the difficult nature of the measurements, or may be due to the fact that in our case the section of the bath is not absolutely uniform and that, for instance, the central portion of the bath, where the two rings meet, represents a somewhat lower equivalent resistance than the rest. The value 1.4, it must be remembered, includes all the irregularities in the shape of the bath, and also the skin effect as far as this influences the resistance. It can only be used for figuring the resistance of furnaces of similar shape and disposition of the bath.

As mentioned previously, the inductance is independent of the weight of the charge, and remains constant at all times. The inductance varies between 0.09 and 0.10, except when the upper coil is lifted, and during the night. The value of the inductance for the old furnace may be taken as 0.095.

Using the figures thus established for the resistance and the inductance, we can figure out theoretically the power factor of the present furnace with different charges, and obtain the following:

Charge, tons.	Power factor.
3	0.81
4	0.73
5	0.65
6	0.60

Design of Large Furnace.

We are now in possession of the necessary figures to proceed with the design of the large furnace and to base it upon the experience with the old one.

With regard to this design, the first condition, of course, is that the space for the charge must be large enough to hold 30 tons, but the actual dimensions and shape of the bath must be such as to give the best possible power factor.

In order to increase the capacity of the furnace, it is necessary to increase the sectional area of the bath more than the length, as otherwise the diameter of the bath, and consequently the dimensions of the furnace, would be-

Table I.

Charge No.	Weight, kg.	Sectional area, sq. cm.	Total resistance, ohms.	Equivalent useful resistance, ohms.
8	1.475	160	0.390	0.380
8	5,032	545	0.094	0.086
29	2.532	273	0.128	0.120
29	5,878	635	0.066	0.058
41	3.600	390	0.124	0.116
41	5.764	623	0.070	0.062
45	2,775	300	0.125	0.117
45	5,890	630	0.070	0.062
50	3,569	386	0.125	0.117
50	4.497	485	0.088	0.080
63	2,905	314	0.140	0.132

come too large. The resistance of the bath will thus be considerably decreased, and at the same time the inductance will be increased, owing to the large diameter, which increases the area of the space between the primary and the secondary windings.

The power factor will thus, in any case, be reduced with the increased capacity, and we have figured that a 30-ton furnace built on the same line as the present one, for single-phase current, with a two-leg magnet and a current supply with 25 alternations, would show a power factor equal to 0.25, and that the power factor even with 15 alternations per second would still be only 0.38.

It was, therefore, decided that the 30-ton furnace should be built on the three-phase principle instead of the single-phase. In this case the weight of the charge per ring is only 10 tons instead of 15 tons with a single-phase furnace, and, as will be shown later, the reduction of the power factor is not nearly so great.

In order to facilitate the tilting of the furnace, the three rings were disposed in one row. This arrangement is not strictly symmetrical, and it is to be expected that the load on the middle phase will be somewhat different from the load on the two outer ones, on account of the difference both in the inductance and in the resistance. With a special supply this is, however, not a very serious drawback, particularly as the difference between the phases in all probability will not be very great.

Dimensions of 30-Ton Furnace.

The dimensions finally chosen for the new furnace are shown in Fig. 2; from this we may now determine the resistance and the inductance in order to arrive at the power factor.

Using the figure 1.4, the useful resistance figures ought to be approximately 0.0001. In order to arrive at the total resistance, this has to be increased approximately 0.7 per cent on account of the losses in the primary winding and the iron core, and the total equivalent resistance based on one winding becomes then 0.00011.

The inductance of the old furnace was 0.095, or, reduced to one turn, 0.00021. In the new furnace this will be increased in proportion to the diameter, that is $\frac{0.00021 \times 3}{2.1} = 0.0003$.

These values of the resistance and the inductance would give a power factor equal to 0.34, which is still too low.

In order to increase the power factor, it is necessary to further decrease the inductance by using a lower periodicity. What can be obtained in this way is shown in the following table:

Periodicity, alternations per second.	Power factor.
25	0.34
20	0.41
16	0.50
10	0.67

From this table we select a periodicity of 16 alternations per second. To decrease the periodicity further still will hardly pay, seeing that the cost of the generator will thus be further increased, even if the output is reduced on account of the power factor being improved. This, however, is a matter which should be gone into more closely later on, in connection with the actual cost of the generator.

Necessary Energy for Furnace.

It remains to figure out the necessary energy required for the furnace, the dimensions of the iron core and the number of primary turns, together with the sectional area of these.

As the furnace will be used with a liquid charge, and no melting down will take place, the amount of energy required is only the amount necessary to keep the bath at the required temperature. Apart from the small losses in the primary coil and the iron core, all the energy is converted into heat in the charge itself, and, as soon as a constant temperature is reached, finally conducted to the surface of the furnace and given out from this by radiation, conduction and through the cooling arrangements. If the water-cooling is arranged in the same way and the amount of water increased correspondingly, it may, therefore, be assumed that the loss of heat, and consequently the energy required to keep the charge hot, will be in proportion to the surface of the furnace.

From Fig. 2 we determine the surfaces of the old and new furnace, as follows:

		New furnace. sq. meters.	Old furnace. sq. meters.
Inside circular surface	(A)	20.5	8
Outside surface	(B)	35	17
Upper surface	(C)	28	15
Lower surface	(D)	28	15

The surface of the new furnace is consequently between two and two-and-a-half times as large as the old one. The amount of energy required in the old one to keep the charge in a molten condition during the night was approximately 180 kilowatts, and during the refining, the energy varied between 260 and 350 kilowatts. The minimum energy required for the new furnace should consequently be $2 \times 180 = 360$, and the maximum, $2.5 \times 350 = 875$. We have assumed 700 kilowatts, but at the same time the generator should be constructed in such a way that, by merely altering the voltage, it can give anything between 400 and 1,000 kilowatts. With 700 kilowatts the current per ring becomes approximately 46,000 amperes, and the current density in the bath will be about 0.34 ampere per square millimeter.

Table II.

	Old furnace.	New furnace.
Total capacity	5 tons	30 tons
Capacity per leg	2.5 tons	10 tons
Diameter of bath	2.1 m.	3 m.
Width of bath	20 cm.	30 cm.
Depth of bath	27 cm.	45 cm.
Total surface of masonry	55 sq. m.	110 sq. m.
Total length of platform	8¼ m.	13 m.
Total width of platform	5¼ m.	6.5 m.
Sectional area of core per leg	1,800 sq. cm.	1,200 sq. cm.
Weight of core	15 tons.	23 tons
Number of primary turns per leg	15	13
Sectional area of primary windings	1,000 sq. mm.	4,000 sq. mm.
Weight of copper per leg	0.875 tons	4.5 tons
Total weight of copper	1.75 tons	13.5 tons
Energy used	250 kw.	700 kw.
Copper losses	12.3 kw.	40 kw.
Iron losses	18 kw.	18 kw.
Power factor	0.65	0.50
Voltage	250	230
Periodicity (½ alternation per second)	12½	8
Amperes, per phase	1,400	3,540
Kind of current	1 phase	3 phase

The further data of the furnace, based upon the figures arrived at above, are:

Iron core, 1,200 square centimeters; weight, about 23 tons.

Primary windings: Voltage, 230 volts.

Number of turns per leg, 13, disposed seven below and six above the bath.

Sectional area, 2 x 20 centimeters.

Weight of copper for the whole furnace, about 13.5 tons.

As stated above, the theoretical number of turns is only 13, but in order to be able to run the furnace at full charge, even if the inductance and resistance should prove to be somewhat different from the values given, two turns should be added per leg, making eight turns in the upper coils. The last three turns in each of these coils should be provided with terminals, enabling one

to use at will 12, 13, 14 or 15 turns per leg.

In Fig. 3 is shown a general arrangement of this furnace, designed on the same lines as the old one. The lower coil is embedded in the masonry below the bath, and consists of copper tubes arranged for water-cooling. The upper coil may be lifted in order to inspect the bath. The inner surface of the furnace, *A*, Fig. 2, is also arranged for water-cooling.

In order to keep the covers for the bath small, the channels were given the form shown in Figs. 2 and 3. The primary coils have been shaped accordingly to follow the shape of the bath as closely as possible.

The primary voltage has been fixed at about 230 volts, as this low voltage greatly facilitates the construction and the insulation of the windings. To embed the coil in the masonry of the furnace would, for instance, be impossible with a higher voltage, and also the upper coil would have to be built and cooled in quite a different manner if it had to carry high tension current. The use of high tension current would, therefore, necessitate a considerably increased distance between the bath and the coils, and thus a considerably lower power factor.

Table II contains the principal data for the old and new furnaces.

Generator.

The generator should, according to the foregoing, be designed for a normal output of 700 kilowatts, 16 alternations per second, 230 volts, 3,540 amperes, and a power factor of 0.5. At the same time it must be able to give 400 kilowatts at 165 volts, and 1,000 kilowatts at 275 volts, with the same power factor, and 290 and 125 kilowatts, respectively, with a power factor of 0.362. The maximum current will thus be 4,300 amperes.

The engine or turbine driving this generator should be for a maximum output of 1,550 effective horsepower, and run at a practically constant speed at all loads between 600 and 1,550 horsepower.

This plant should be quite sufficient to supply energy to the 30-ton furnace, even if the constants of this should vary considerably from the figures given above.

Engine and Mill Built in Record Time

The Mesta Machine Co., Pittsburgh, which recently established a record of 30 days from receipt of order, for building complete a large Corliss engine for rolling mill work, has established a new rapid construction mark by building complete from the raw material to the finished product, in 24 days, one 32 x 48-inch simple Corliss engine weighing 176,000 pounds and one 22-inch, three-high puddle mill weighing 195,000 pounds. This equipment was built for the Sellers Mfg. Co., Chicago.

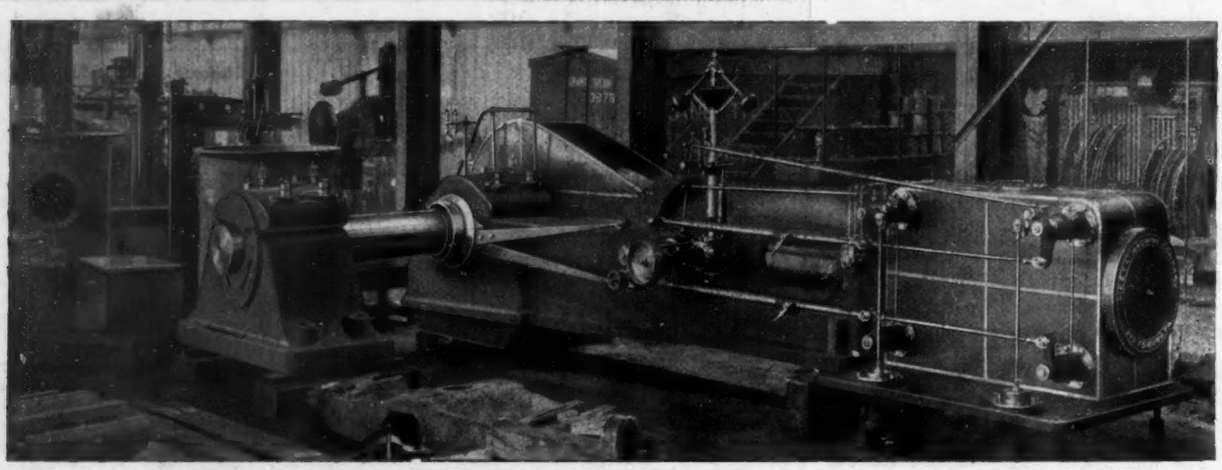


FIG. 1—CORLISS ENGINE BUILT FOR THE SELLERS MFG. CO., CHICAGO, BY THE MESTA MACHINE CO., PITTSBURGH

When this order was received there was no stock material on hand and the entire equipment was cast, forged, machined, erected complete and shipped in 24 days from the date the order was signed. Delivery was specified in 30 days and time of shipment was the principal factor that entered into the competition.

The engine is designed for heavy service, being direct-connected to the mill which is built for rolling busheled iron for the Sellers Mfg. Co. This iron is made in a rotary busheling furnace and the mill is so designed that it can be arranged as a 24-inch mill by changing the pitch of the pinions. The mill equipment includes a full complement of rolls and guides.

The Perry Iron Co., Erie, Pa., relighted its stack Sept. 27.

PREPARING STACKS

To Resume Operating—One Furnace Was Relighted.

Reading, Pa., Sept. 27.

Topton blast furnace, owned by the Empire Steel & Iron Co., was started Sept. 26. This stack has been idle for nearly eighteen months. During this time extensive repairs were made to the machinery and the stack was relined.

The lining of Robesonia furnace has been finished, and it is now being dried out preparatory to being put into blast. Some repairs are still to be made about the stoves and machinery, but it is expected that the furnace will be started up about Oct. 15. The stack has been out for some time undergoing repairs.

Keystone furnace in this city, which is undergoing repairs and relining, will be ready for operating about Nov. 1.

Leesport furnace is being placed in shape to resume operations and it is probable that if the iron trade warrants, will be put in blast some time this fall. It has a capacity of about 475 tons a week.

Temple stack, owned by the Temple Iron Co., is practically ready to resume, but there is no telling when it will be started.

A complaint filed with the interstate commerce commission at Washington, D. C., by the Wisconsin Steel Co., promises to be almost as important as the now famous West Virginia coal case. The Wisconsin company complains of an advance of from $2.35 to $2.50 a ton on coke from the Connellsville, Pa., regions to South Chicago.

CONCRETE SHAFTS

Being Sunk in Mines—Difficulties at the Maas Property.

Ishpeming, Mich., Sept. 30.

The Cleveland-Cliffs Iron Co., which already has five producing mines in that field, has started the development of still another property in the Swanzy district of the Marquette range. This property is the Cyr, 3½ miles distant from the little city of Gwinn. The five mines which are producing are the Austin, Smith, Princeton No. 1, Princeton No. 2 and Stephenson, the latter named in honor of Wisconsin's United States junior senator, who is given the credit of first discovering iron ore in the Swanzy country, more than a half century ago, when the region was an unbroken wilderness. Aside from its quintet of shippers, and in addition to the Cyr, the Cleveland-Cliffs company has in course of development two prospective mines of much promise. These are the Kidder and Northwestern.

Two shafts are to be sunk at the Cyr, and because of the wet and sandy nature of the ground overlying the ore body it will be necessary to penetrate to the ledge by means of the caisson method and to install thick walls of concrete from surface to the capping of rock. The New York Foundation Co. has the contract for this work and has already commenced operations.

Prior to the adoption of concrete in shaft construction, the Cleveland-Cliffs company entered upon the work of opening the property that is now the big Maas mine, at Negaunee, Marquette range. The surface material was a quicksand—170 feet of it—and it was only after many months of labor and a great expenditure of money that the rock formation was reached. The shaft was very heavily timbered. Sunk through treacherous ground, however, it was considerably out of plumb for the distance between the surface and the rock, and subjected to enormous pressure. Its condition finally became such that it was decided to line the upper portion with reinforced concrete. This work was started last December. Now, after 285 days, the big task has been completed and the result is a shaft which will outlast the mine itself, as large as its ore body is. The concrete walls are cylindrical in form and extend downward 192 feet, at which point they are firmly anchored in the ledge of rock. They are 7 feet, 11 inches thick at their greatest width, where the pressure from the overburden is the most severe, tapering to a thickness of 2 feet, 6 inches in the upper portion, where the pressure is the least. Inside the walls, the opening is rectangular in shape, 11 feet, 2 inches by 15 feet, 2 inches. This contains four compartments—two skipways, one cageway and a pump, pipe and ladderway. The concrete is reinforced with 1-inch steel bars, 50 tons of which were used. It was necessary to employ the air lock system in constructing the last 75 feet of the shaft. This part of the work required 100 days. Seventy-five men were employed. They worked under an air pressure of 47 pounds most of the time, and in shifts measured by minutes. A particularly difficult and hazardous task was the removal of the timber in the shaft. There was approximately 150,000 running feet of this, and of necessity the utmost care had to be exercised to prevent a disastrous inrush of sand and water. The new construction work required the use of more than 200,000 feet of timber, principally for building the molds.

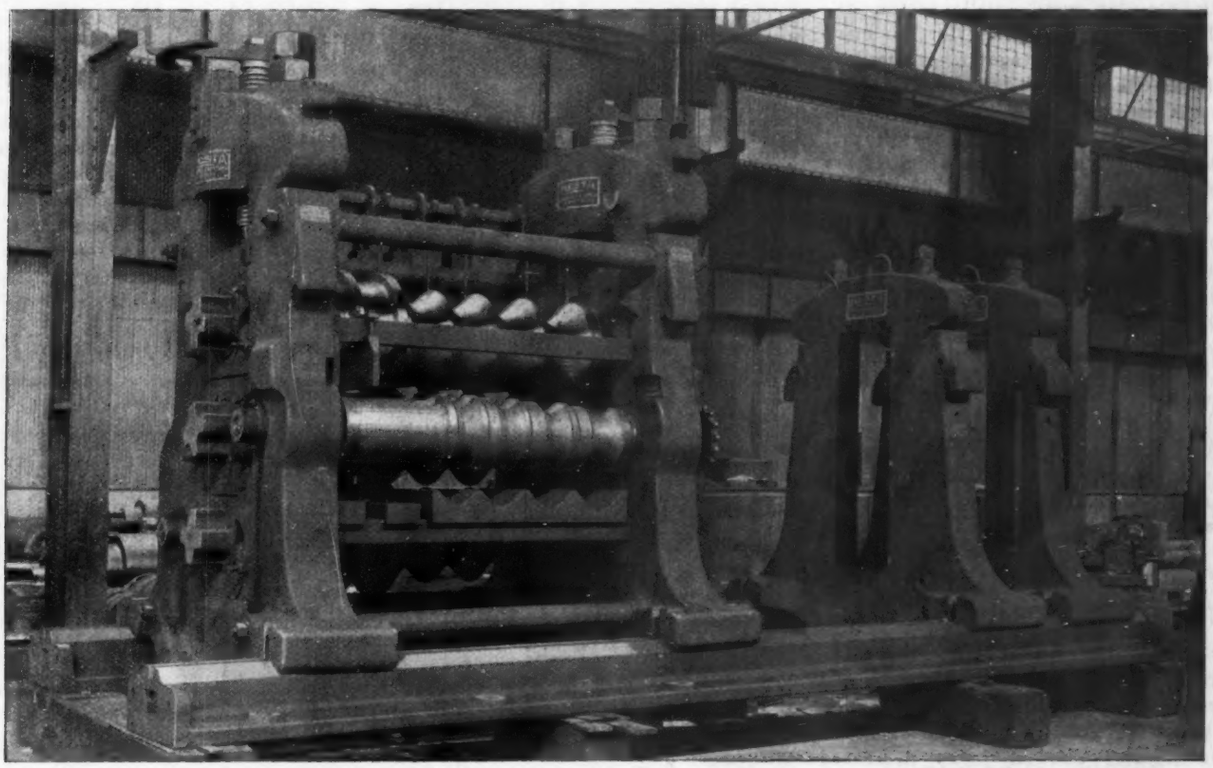


FIG. 2—TWENTY-TWO-INCH, THREE-HIGH PUDDLE MILL, BUILT BY THE MESTA MACHINE CO. FOR THE SELLERS MFG. CO.

In Receiver's Hands.—The Chester Engineering Co., Chester, Pa., has gone into the hands of receivers as result of the suits by creditors. The capital stock of the company is $75,000. Depressed business conditions are advanced as the cause of the embarrassment.

The Shenango Furnace Co. lighted its No. 1 Shenango blast furnace on Sept. 20.

Many low price records for 1911 were touched on the New York stock exchange the early part of last week. The latter portion, however, was attended by marked price improvements.

Monday the market was active, prices declining to the lowest average of the year; violent recovery followed later and the net changes for the day were small; cotton declined to new low price; foreign markets weak and irregular. Tuesday, stocks opened weak but closed strong; grain markets were higher and cotton lower. Wednesday, the formal denial by Steel Corporation directors of rumors of voluntary dissolution caused a day of excited trading; prices opened high, broke heavily later and reacted towards the close. Thursday, trading continued active, but the price movement was more orderly and gains were recorded in the more prominent issues; the war news was a disturbing factor in both domestic and foreign markets. Friday, the market was less active and price range narrowed, net changes being small. Saturday, the market was dull but strong, and closed higher; grain and cotton markets were slightly lower; foreign markets were unsettled.

Money on call continued to range between 2½ and 2 per cent, while time money ruled dull at the usual rate with business at a minimum. The actual condition of clearing house institutions showed loans decreased $5,437,000; net deposits decreased $7,165,000; total reserve, $428,215,000; excess of reserve, $21,624,850, a decrease of $2,670,250, and the percentage of reserve 26.6, compared with 26.5 the week previous. Non-member banks and trust companies showed loans decreased $4,792,200; net deposits decreased $5,368,900; reserve on deposit decreased $373,600; and the percentage of reserve, 19.3, compared with 19.1 the week previous. Bank clearings were about 9.3 per cent in excess of last week and 13.1 per cent above a year ago. Commercial failures numbered 268, compared with 212 the preceding week and 219 the corresponding week last year. Shares were sold to the number of 6,675,600, compared with 4,810,600 the week previous and 2,200,600 the corresponding week last year. Bonds, exclusive of government bonds, were sold to the amount of $26,467,000, compared with $11,608,000 the preceding week and $13,287,000 the corresponding week last year.

	Closing Quo. Sept. 30	Changes in week	Annual Meeting date 1911	Stock Outstanding	Basis.	Dividend Last Dividend	Dividend Date Last Div. Pay
Allis-Chalmers	6	— ¼		$19,820,000			
Allis-Chalmers, pr	16¾	.....	Nov. 2	16,150,000	7 cum.	1¾ Q.	Feb., 1904
American Can	9¾	— ⅛	Feb. 1	41,233,300		1¾ Q.	.....
American Can, pr	83½	+ ⅜		41,233,300	7 cum.	1¼ Q.	Oct., 1911
Am. Car & Fdy	44¾	— ¼	June 29	30,000,000		½ Q.	Oct., 1911
Am. Car & Fdy., pr	115	—1½		30,000,000	n. c.	1¾ Q.	Oct., 1911
American Loc	35¾	+1¾	Oct. 17	25,000,000	5	1¼ Q.	Aug., 1908
Am. Loc., pr	104½	.....		25,000,000	7 cum.	1¾ Q.	Oct., 1911
American Ship	50	—4	Oct. 11	7,600,000	4	2 Q.**	June, 1911
American Ship, pr	106½	.....		7,900,000	7 cum.	1¾ Q.	Oct., 1911
Am. Steel Foundries	28½	+2½	Dec. 7	17,184,000		1 Q.	May, 1911
Barney & Smith	17	—3	June 6	2,000,000	4	1 Q.	Dec., 1907
Barney & Smith, pr	70	—17		2,500,000	8 cum.	2 Q.	Sept., 1911
Bethlehem Steel	28⅜	+ ⅜	April 4	14,862,000		.....	.....
Bethlehem Steel, pr	55½	.....		14,908,000	7 n. c.	¾ Q.	Feb., 1907
Cambria Steel	43½	+1½	Mar. 21	45,000,000	5	1¼ Q.	Aug., 1911
Cambria Iron	43	— ½		8,468,000*	4	2 S. A.	Oct., 1911
Chicago Pneumatic Tool	44⅞	+4⅞	Feb. 20	6,485,800	4	1 Q.	Oct., 1911
Colorado Fuel	26	+ ½	Oct. 16	34,235,500		1¾ Q.	Apr., 1902
Crucible Steel	10½	+ ½	Oct. 18	24,578,400		3½ Q.	.....
Crucible Steel, pr	76	+1¾		24,463,500	7 cum.	1¾ Q.	Sept., 1911
Empire Steel	5	.....	Feb. 22	1,254,770		.....	.....
Empire Steel, pr	50	.....		2,500,000	6 cum.	1 S. A.	July, 1911
Fay & Egan	70	.....	Feb. 21	1,000,000	6 cum.	3 S. A.	Feb., 1911
Fay & Egan, pr	110	.....		1,000,000	7 cum.	1¾ Q.	Aug., 1911
General Electric	149½	+4½	May 9	65,179,600	8	2 Q.	Oct., 1911
Harbison-Walker	48	.....	Jan. 16	18,000,000		½ Q.	Sept., 1911
Harbison-Walker, pr	99	.....		9,600,000	6 cum.	1½ Q.	July, 1911
International Pump	28½	— ½	Dec. 12	17,762,500		1 Q.	Nov., 1910
International Pump, pr	82	+1		11,350,000	6 cum.	1½ Q.	Aug., 1911
Lackawanna Steel	30	.....	Mar. 4	34,978,000		.....	.....
Lake Sup. Corp	22½	.....	Oct. 4	40,000,000		.....	.....
New York Air Brake	55	.....	Mar. 8	10,000,000	6	1½ Q.	July, 1911
Niles-Bement-Pond	94	.....	Feb. 8	8,500,000	6	1½ Q.	Sept., 1911
Niles-Bement-Pond, pr	104	.....		2,000,000	6 cum.	1½ Q.	Aug., 1911
Otis Elevator Co	69	.....	Mar. 20	6,375,000	1	1 Q.	Oct., 1911
Otis Elevator Co., pr	95½	+ ½		6,310,000	6 n. c.	1½ Q.	Oct., 1911
Pa. Steel	60	.....	May 8	10,750,000		.....	.....
Pa. Steel, pr	106	.....		16,500,000	7 n. c.	3½ S. A.	May, 1911
Pittsburgh Coal	17½	.....	Feb. 10	28,104,600		.....	.....
Pittsburgh Coal, pr	78	—1		27,071,800	7 cum.	1¾ Q.	July, 1911
Pressed Steel Car	26⅜	+ ¼	Feb. 15	12,500,000		1 Q.	Aug., 1904
Pressed Steel Car, pr	94	+2		12,500,000	7 n. c.	1¾ Q.	Aug., 1911
Pullman	155	+1	Nov. 8	120,000,000	8	2 Q.	Aug., 1911
Railway Stl. Spring	27¼	+ ¼	Mar. 2	13,500,000	2	1 S. A.	Oct., 1908
Railway Stl. Spring, pr	94	.....		13,500,000	7 cum.	1¾ Q.	June, 1911
Rep. Iron & Steel	22¼	+ ¼	Oct. 18	27,191,000		.....	.....
Rep. Iron & Steel, pr	85	+1		25,000,000	7 cum.	1¾ Q.	Oct., 1911
Sloss-Sheffield	36	.....	Mar. 15	10,000,000	5	1¼ Q.	Sept., 1910
Sloss-Sheffield, pr	112	.....		6,700,000	7 n. c.	1¾ Q.	Oct., 1911
U. S. Pipe & Fdy. Co	12½	— ½	June 28	12,106,300		1 Q.	Dec., 1910
U. S. Pipe & Fdy. Co., pr	40½	—2⅛		12,106,300	2	1¼ Q.	June, 1911
U. S. Steel	61⅝	+5⅛	April 17	508,302,500	5	1¼ Q.	Sept., 1911
U. S. Steel, pr	110¾	+5		360,281,100	7 cum.	1¾ Q.	Aug., 1911
U. S. Steel 5s	101⅜	+ ⅜		463,798,000	5	.....	.....
Va. Iron, Coal & Coke	75	.....	Sept. 19	9,073,680		5. †	Oct., 1907
Westinghouse Electric	62¾	+3¼	July 26	3,998,700*		1¾ Q.	Oct., 1911
Westinghouse Air Brake	145	+3	Oct. 3	13,750,000*		5 Q. ‡	Oct., 1911

Par value of shares, $100, except those starred (*), $50.
**Includes last 1 per cent payment of 4 per cent extra.
†Stock.
‡Includes 2¼ regular, 1½ extra and 1 special.

Copper Stocks.

New York.—Amalgamated Copper closed 50⅞, a net gain of 2.

Boston.—Butte Coalition closed 14⅞, a net gain of ⅜; Calumet & Arizona closed 49, a net gain of 2; Calumet & Hecla closed 380, a net gain of 10; North Butte Mining closed 23, a net gain of ½; Quincy Mining closed 60, a net gain of 4.

Financial Notes.

The Standard Underground Cable Co. has declared the usual quarterly dividend of 3 per cent, payable Oct. 10.

The Pope Mfg. Co. has declared the regular quarterly dividend of 1½ per cent on preferred stock, payable Oct. 31.

The Thompson-Starrett Co. has declared the regular semi-annual dividend of 4 per cent on preferred stock, payable Nov. 15.

STRIKE DECLARED

By Shop Employes of Harriman Railroad Lines.

The threatened strike of shopmen on the Harriman lines, embracing five crafts and unions, endeavoring to force a recognition of their newly-formed federation of shop employes, became a reality Sept. 30, when possibly 15,000 men stopped work. The men walked out without any demonstration and no rioting was reported at any of the different shops, although extra police protection had been supplied in many places. Traffic was generally continued without interruption.

Chicago has been made the headquarters of both the railroad officials and the strikers. These latter claim that the first department to be affected will be the suburban service there, as the hostlers in the Burnside and East Twenty-seventh street shops have voluntarily quit, although they do not belong to the federation. The railroad officials in Chicago, including Julius Kruttschnitt, vice president of the Harriman lines, who arrived in that city Sept. 30, all maintain strict silence, and no official statements have as yet been made. The number of shopmen involved in the strike in Chicago is said to be about 3,500.

In the far west, the number of shopmen who left work were as follows: San Francisco, 575; Oakland, Cal., 1,048; Sacramento, 3,000; Tracy, Cal., 137; Stockton, Cal., 29; Roseville, Cal., 375; Fresno, Cal., 92; Bakersfield, Cal., 424; San Luis Obispo, Cal., 112; Los Angeles, 1,248; Dunsmuir, Cal., 198; Hornbrook, Cal., 13; Ashland, Ore., 47; Portland, Ore., 1,500; Sparks, Nev., 250. Ernest Reguin, president of the shopmen's federation at San Francisco, who is directing the strike at that place, declares that the unions are able to pay $7 a week strike benefit for an indefinite period. No demonstrations have been made, but the railroads have surrounded their shops with high fences and extra police have been placed on duty.

Three New Mines

Notwithstanding the dull state of the iron trade, three new mines have been added to the list of Iron River shippers. These are the Chicagon, of the Rogers-Brown interests; the Kaseco or Koniwinski, of Pickands, Mather & Co., and the Gleason, of the New York State Steel Co. All of these are still in course of development. The Antoine Ore Co.'s Traders' mine, at Iron Mountain, Menominee range, has mined and shipped some 75,000 tons of ore since restored to the active list some three months ago. Considering that the pit was full of water when operations were instituted and that labor has been none too plentiful, this is an excellent record. The property will continue active until the close of the season of navigation. Extensive development work is planned at the Traders, and preliminary to its institution a large amount of diamond drilling is to be done. This work has been started. The purpose of the drilling is to prove the extent of the deposit. It is the intention to strip practically the entire ore-bearing area. In addition, a number of extensive drifts will be driven. The Traders is wrought on the "milling" system. Oglebay, Norton & Co., of Cleveland, are the selling agents, and along with them the Republic Iron & Steel Co. and other large interests are associated in the control of the property.

Simmons Company Will Increase Capital

The Simmons Hardware Co., St. Louis, has announced its intention to re-incorporate, perhaps as the Simmons Hardware Companies, to issue $5,000,000 of five-year notes and increase its capital stock $1,500,000. George W. Simmons, vice president of the company, told a representative of THE IRON TRADE REVIEW, Saturday, that the re-organization scheme had been indorsed by almost an unanimous vote of the stockholders, and that plans to bring the new corporation into being would be put on foot at an early date. The company contemplates the issuance of $5,000,000 five-year notes to take up its present floating indebtedness and to provide additional capital for further expansion. Re-incorporated, the company will have a gross capitalization of $11,000,000.

Bridge Specifications.—Specifications are now being received by the Carnegie Steel Co. for the plain material for the Quebec bridge. This contract was formally placed with the mills of the United States Steel Corporation through the United States Steel Products Co. several months ago. The total steel requirements are very large, aggregating about 80,000 tons.

Sarah stack of the Kelly Nail & Iron Co., Ironton, O., was in blast all of September, after having been thoroughly overhauled the last week in August.

WELFARE WORK

Occupies the Attention of Directors of Iron and Steel Institute.

Different phases of the welfare work now being carried on in the iron and steel works of the country occupied the sole attention of the directors of the American Iron and Steel Institute at their regular monthly meeting in New York, Sept. 27. Considerable progress was reported to have been made in these endeavors, especially in the establishment of the six-day week, which is now in force in several works. Plans were laid for pushing and broadening the welfare work in this and other important particulars. Secretary McCleary of the institute, Dr. Thos. Darlington, secretary of the welfare committee, Wm. B. Schiller, president of the National Tube Co., and others made verbal reports on the work being accomplished.

Bond Issue of Struthers Furnace Co.

In order to fund the indebtedness of the Struthers Furnace Co., incurred principally in connection with rebuilding the furnace at Struthers, O., and development of coal lands in Fayette county, Pa., the purchase of a bond issue of $750,000 was announced by Tillotson & Wolcott Co., Cleveland, Sept. 30. The bonds, which are first mortgage and collateral trust, 6 per cent, are dated Oct. 1, 1911, and mature serially to October, 1926. No addition to the annual interest charges of the company, over the amount paid in the last few years, is made by the new bond issue. The company's annual earnings, above all charges, have averaged $102,000.

Removed to Dayton

J. B. Reichmann, president, and Dixon Boardman, receiver, of the Platt Iron Works Co., Dayton, O., have moved to that city from New York to take charge of the plant. H. H. Royson, attorney for eastern creditors, has expressed his satisfaction concerning the manner in which the affairs are being disentangled, and the operation of the plant will be continued.

The Chicago Bridge & Iron Co. was awarded the contract for the construction of a new clear water tank for the city waterworks at Merrill, Wis. Moe & Henrichs are the general contractors for improvements amounting to $35,000.

THE IRON TRADE REVIEW

Devoted to Iron and Steel Manufacture and to the Machinery, Metal-Working and Foundry Trades.

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THE AVERAGE PAID CIRCULATION OF THE IRON TRADE REVIEW FOR THE ISSUES OF THE FOLLOWING MONTHS WAS:

January, 1911	6,058
February	6,072
March	6,091
April	6,108
May	6,112
June	6,124
July	6,138
August	6,152

October 5, 1911

The Daily Iron Trade Review

That manufacturers engaged in the iron, steel, machinery and non-ferrous metal trades require a daily news service of the developments in their allied industries has been established by the success of the Daily Edition of THE IRON TRADE REVIEW. Although published only two years, its wide circulation reflects the great demand for prompt and accurate trade information. The daily edition of the weekly has served its mission.

The Daily Iron Trade Review, the first issue of which was published Monday, Oct. 2, is the outgrowth of and successor to the Daily Edition of THE IRON TRADE REVIEW. All of the best features of the latter publication have been retained, and its enlarged form will permit of expanding this news service to cover trade developments more fully than has been possible heretofore. In place of four issues per week, *The Daily Iron Trade Review* will be published every business day except Saturday.

A Wall Street Incident

Now that the United States Steel Corporation has formally declared that it doesn't propose to be a party of any operation of self-dismemberment, the security market bears less resemblance to a hurricane than it did a few days ago. The effect of the statement has been reassuring. The stock-trading public has begun to think and act more rationally and there are a few morals to be gathered from the debit and credit balances that remain as trophies or scars of the incident. Wall Street is probably a little unhappier that this insanity of doubt is passing, for it has been many months since "the street" has had the chance to show any of its old-time activity.

In all the recent hysterical fear and dolorous sentiment that was aroused in speculative circles over the possibility of a dissolution of the United States Steel Corporation, voluntarily or otherwise, one aspect of the situation that such a frenzy and its disastrous results are possible among usually clear thinking business men, stands out with impressive gravity. Originating a number of weeks ago, somewhere, somehow, no one is able to tell, there came to the stock market a feeling of anxiety over the Steel stocks. Underlying conditions gave no clue as to the inception of this restless feeling. The Steel Corporation had been under fire by the government's representatives for several years both by the commissioner of corporations and more recently by the Stanley congressional committee. Nothing had been openly disclosed by these investigations that would seem likely to undermine the popular opinion that if there was such a thing as a good trust in this country, it was the United States Steel Corporation. There was absolutely nothing above the surface to suggest that the Steel Corporation officials had recanted their apparent purpose stoutly to oppose the government in any intimations of monopoly control or illegal restraint of trade. Possibly the reorganization negotiations between the representatives of the government and those of the American Tobacco Co. and the Standard Oil Co. had given Wall Street a clearer view of what to expect from the administration in its attitude towards large aggregations of capital. Perhaps the conference held had caused words and inferences to be dropped by the legal representatives of the government that could be regarded as significant for all corporations then under scrutiny. Of course, if such were the case, the chosen circles quickly heard of it.

At all events, Wall Street was pessimistic on Steel and scarcely knew the reason why. Leaders in the trade pronounced business conditions to be very fair and the industry was showing greater promise than for several months. But such reports were received with only skepticism and distrust. Trade conditions or no trade conditions, Wall Street continued pessimistic and kept a close eye on Steel securities.

Suddenly, out of the threatening sky, came the startling report that the Steel Corporation would voluntarily dissolve. The report came in the form that is common to Wall Street—a rumor, intangible and insidious, without authority and with no known grounds for its origination or its continued currency, but for all that, an unusual report, and one from its nature well worth discussion and analysis by the stock fraternity. Wall Street readily admitted it to be an interesting report and paused for deeper thought. "What if it should be true?" conjectured the professional stock traders and the brokers. "What if it should be true?" echoed the public, vainly trying to converge its opposing hopes and fears into a decision whether to buy or sell. The silence of the Steel Corporation officials lent the weight of reasonable probability to the accuracy of the rumor.

The moment was a golden one for the tried and skillful operator. A day or so of puzzled doubt passed and then from all directions there fairly burst upon the stock exchange an avalanche of selling orders, so extensive and steady in its volume as to suggest a

well-organized bear raid. Steel securities sank under the attack and there then followed a genuine liquidation of enormous proportions, clearly the selling of panic-striken investors. In five days, Steel common dropped 15 points and the preferred stock showed a net loss of nine points in a week. In actual market values, in these securities, such an astounding sum as approximately $110,000,000 was swept away by the decline. Other stocks sentimentally affected, also broke, adding to the enormous losses.

And the cause of it all? Wall Street itself has said it knows of no valid reason for such a wild flood of liquidation. There was absolutely nothing in the situation, either from statements by the government or by the officials of the Steel Corporation to support the wild rumor of a voluntary dissolution. Yet on these barest rumors, unsubstantiated and unsupported, by known fact or statement, there was precipitated a situation where millions of dollars of actual values were gouged from the pockets of legitimate investors. It is a commentary on common sense and clear judgment that conditions based on such vapory illusions could be allowed to develop to a point that would so woefully destroy confidence and stamp out values in all proportion to earning rates.

And still Wall Street is the institution which, unhappily, many business men look to for the reflection of the soundness of business and the future movements of trade.

It should be a feeling of gratification to bona fide iron and steel makers that Wall Street wants more to do with them and their business than they want to do with Wall Street. It will likewise be easier on the pocketbooks as well as the nerves of a certain faction of the general public when these individuals cease to let Wall Street determine for them their sentiments on the underlying conditions of legitimate trade at the expense of their own common sense and sound judgment.

The Toledo Annealing Charging Truck Mfg. Co., Toledo, O., has been incorporated by John G. Blum, Marietta N. Blum, Jos. M. Rutherford, Rachel E. Rutherford and R. M. Schwartz, with a capital of $10,000.

The Growth in Alloy Steel

Detailed statistics of the production of alloy steel in 1910 have just been made public by the American Iron and Steel Association, and are presented in full elsewhere in this issue. In the annual statistical report issued several months ago, the totals of alloy steel were given, with details as to the processes employed in making the original steel, but no details were given as to the alloy metals used, it being merely indicated that by the Bessemer process 296,898 tons of alloy steel were made, by the basic open-hearth 206,135 tons, by the acid open-hearth 44,394 tons, by the crucible process 19,784 tons and by the electric process 608 tons, a total of 567,819 tons, against 181,980 tons the preceding year.

By the statistics just presented, we learn that of the total of 567,819 tons of alloy steel, 326,316 tons, or 57.5 per cent, were titanium, which by the way does not make an alloy steel so much as it serves to purify the steel. As that is more or less the function of a number of the metallic additions made to steel, the fact is not important from a statistical standpoint, and we have to accept the term alloy or alloyed steel as a suitable one for statistical purposes, although it is not scientifically correct.

The great bulk of the titanium steel made was by the Bessemer process, 285,891 tons, or 88 per cent of the total 326,316 tons of titanium steel. The nickel, chrome and nickel-chrome steel, on the other hand, amounting to 32 per cent of the total alloy steel, was made almost exclusively by the open-hearth process, and chiefly by the basic open-hearth, the tonnage of Bessemer steel thus treated being altogether negligible.

Thus we already have interesting statistical confirmation of the idea entertained rather generally that for special purposes Bessemer steel needs purification. The fact that titanium was used chiefly with Bessemer steel indicates this, while the fact that the nickel and chrome additions were made entirely to open-hearth steel, and that chiefly basic, serves to suggest that when the desire is to produce a definite alloy having physical qualities superior to that of good plain steel, open-hearth and not Bessemer is selected, presumably because the open-hearth starts out with some of the qualities which it is desired to produce.

One is somewhat surprised at the relatively meager showing made by vanadium in steel alloys, considering the extent to which its various services to steel have been exploited. Of straight vanadium steel, there is reported 9,049 tons, or 1.6 per cent of the total of alloy steel. There is also reported 6,903 tons of chrome-vanadium steel and 8,760 tons of nickel-chrome-vanadium steel. Adding these three together, we have 24,712 tons, which is 4.4 per cent of the total of all alloy steel, less than one-quarter as much as nickel steel and less than one-half as much as nickel-chrome steel. Vanadium, however, is employed in a variety of useful ways which do not secure it a representation in statistics.

The production of manganese steel is limited. The total was only 19,360 tons, or 3.3 per cent of the total, about equally divided between Bessemer and open-hearth, the bulk of the open-hearth being acid. The statistics show a curious segregation in manganese steel. Practically the entire tonnage of manganese basic open-hearth steel was for the production of ingots, while on the other hand, practically all of the Bessemer and every ton of the acid open-hearth was for the production of castings.

Continuation Courses.—Lewis Institute, of Chicago, has issued a schedule of continuation courses to be given evenings and Saturdays, beginning Oct. 9. The schedule includes engineering, chemistry, physics, mathematics, drawing, languages and household arts. The courses can be taken independently or in connection with the regular college work. Of the total enrollment of 3,200 last season, 1,800 were enrolled in the continuation courses.

The Pacific Gas & Electric Co. will built a large gas producing plant at Livermore, Cal.

HAWGOOD PAPERS

Turned Over to Higher Officer of American Ship Building Co.

Following the action of the Commonwealth Steamship Co., of Cleveland, which several months ago began an inquiry into the alleged receipt of commissions by the firm of W. A. Hawgood & Co., of that city, marine insurance brokers and steamship managers, from the American Ship Building Co., the Acme Transit Co., on Sept. 30, instituted similar proceedings at Cleveland. The Acme Transit Co. operates the following vessels: J. M. Jenks, Bransford, Edwin F. Holmes, Umbria, Wisconsin, Etruria, Harvey D. Goulder, H. B. Hawgood, Henry B. Smith and Salt Lake City.

Depositions were taken in the office of Griswold & White, American Trust building, Cleveland. Russel C. Wetmore, vice president and treasurer of the American Ship Building Co., was called and in his testimony stated that he could not recall that any commissions had been paid the Hawgood company on any of the vessels now comprising the Acme Transit Co., although he was not prepared to deny that any such transactions had taken place. He also said that certain papers concerning the dealings of his company with the Hawgoods had been delivered to James H. Hoyt, attorney for the ship building company, in the summer of 1911, and that lately they had been turned over to W. L. Brown, of Chicago, chairman of the board of directors of the American Ship Building Co., at his request. He admitted that the papers might contain contracts, receipts and checks. When asked whether the Hawgoods had received any commissions on any of the vessels built for them, including those for the Commonwealth Steamship Co., he admitted that he thought that they had received commissions on some.

Arthur Hawgood, of the firm of W. A. Hawgood & Co., testified that he and his brother, William Hawgood, had received no commissions on the Jenks and Bransford, but had received $5,000 on the Harvey D. Goulder, $15,000 on the Henry B. Smith, $17,000 on the Edwin F. Holmes and $25,000 on the Salt Lake City, a total of $62,500. No admissions were obtained as to commissions on the remainder of the vessels, namely the Etruria, Umbria, Wisconsin and H. B. Hawgood.

Chairman W. L. Brown of the American company was interrogated in Chicago yesterday by attorneys as to his knowledge of the Hawgood transactions.

Brown-Ketcham Affairs in Grand Jury's Hands

Frank D. Stalnaker, receiver for the Brown-Ketcham Iron Works, Indianapolis, has received a report from special auditors employed to go into the company's affairs, showing that from Jan. 1, 1909, to April 29, 1911, officers of the firm overdrew $53,290.92. It is shown that W. H. Brown, president, overdrew $12,120.59, W. R. Brown, general manager, $9,109.71, and the indebtedness of Mrs. L. M. Ketcham is said to be $31,651.09. The affairs of the company are being investigated by the grand jury.

Iron and Steel Institute

It is announced that the meeting at Turin, Italy, of the Iron and Steel Institute has had to be abandoned and that all arrangements for holding it have been cancelled. When the preparations were begun, a large attendance was anticipated, but it appears that owing to various circumstances numerous withdrawals have been notified within the last fortnight by which the numbers were very seriously diminished.

At the same time, the statutory requirements of the charter necessitate a meeting being held in the autumn and arrangements have been made with this object. The meeting will be held on Thursday, Oct. 5, at the Institution of Civil Engineers, by kind permission, when the usual autumn ballot for membership will take place and the papers down for reading at the Turin meeting will be read and discussed.

St. Louis Shipments

Receipts and shipments of pig lead and spelter at St. Louis for the last two weeks were as follows:

	Zinc and spelter.	Pigs of lead
Receipts:—		
Week ending Sept. 23.....	69,700	52,030
Week ending Sept. 30.....	90,620	53,550
Shipments:—		
Week ending Sept. 16.....	88,700	29,180
Week ending Sept. 30.....	114,150	39,800

Large Ingot Cast.—Press reports state that the largest ingot of its kind ever made in the city of Chester, Pa., was recently cast at the plant of the American Steel Foundries at that place. This casting is 5 feet in diameter, 26 feet in length and weighs approximately 50 tons. It is to be used as a shaft for a government vessel.

LARGE EXTENSIONS

Will be Made by a Brass Company at Kenosha, Wis.

The Chicago Brass Co., of Kenosha, Wis., has purchased all the holdings of the Frost Mfg. Co., which adjoin its plant and complete a solid block of factory buildings, and will remodel the Frost shops for its own purposes. The Frost company, which manufactures plumbers' supplies and materials, will proceed at once with the erection of a new plant in another part of the city. Meanwhile it will continue to operate in the buildings purchased by the brass company. These buildings, covering nearly two acres, were originally built for the Badger Brass Mfg. Co., of Kenosha, ten years ago, but sold to the Frost concern when the Badger company erected a modern plant several years ago. George H. Allen, manager of the Chicago Brass Co., said: "We have bought the Frost holdings simply to get the land we need to take care of the future growth of the business. The company has many things planned for the future. Definite plans will probably be taken up at an early meeting of the board of directors."

Promise Big Tonnage

In its Rogers property in the Iron river district of the Menominee range, the Munro Mining Co. of the Rogers-Brown interests has a prospective producer of large importance. Sinking to the ore body, which lies at a depth of 900 feet, is in progress. There is an overburden of some 140 feet of quicksand and bowlders, and for that distance the shaft is of concrete. The method of construction was similar to that which will be employed at the Cyr. The same company is, in fact, doing the work at the latter property. Ground at the Rogers was broken last February. The shaft was firmly imbedded in the ledge some time ago, and in the ordinary manner is now being put down through solid rock. The Rogers will develop a large deposit found by diamond drilling. It is being given a most substantial and modern equipment and in time will rank with the most important producers of the range.

The Buckeye Iron & Brass Works, Dayton, O., announces that John W. Taylor, of Dallas, Tex., has been named to represent the company in the southwest for the sale of its cotton seed oil machinery.

TWO MORE BOATS

Sold by the Commonwealth Steamship Co.—Suits Withdrawn.

The Commonwealth Steamship Co. has sold the steamer Henry A. Hawgood to Capt. W. C. Richardson, and the steamer William A. Hawgood to R. L. Ireland of the firm of M. A. Hanna & Co. This makes four boats that the Commonwealth Steamship Co. has disposed of within the past few weeks, the Arthur H. Hawgood and W. R. Woodford having hitherto been purchased by interests associated with the Inland Steel Co. through Babcock & Penton, naval architects and engineers.

In view of complications that might arise over the title to the ships, through suits recently started by the Commonwealth Steamship Co. against the American Shipbuilding Co. to force the latter to refund the contract price of the vessels and take the boats back because of secret rebates alleged to have been paid the promoters, it was deemed advisable to withdraw the petitions filed in the United States circuit court. The only course now open to the steamship company is to bring action to recover as damages the difference between the selling price and the price set forth in the builder's contract with the Commonwealth Steamship Co.

Death of Thomas P. Kelly

Thomas P. Kelly, head of the firm of T. P. Kelly & Co., New York City, manufacturers and dealers in foundry facings and supplies, died at the St. Vincent hospital, New York City, Sept. 22. Mr. Kelly had been ill since about the middle of June and his death was due to effects arising from a stroke of paralysis. He was 60 years of age, having been born in Waterford, Ireland, in 1851. He was especially well known in the foundry trade as an expert on foundry facings. His experience in the manufacture and sale of these products had extended over many years. When he came to this country, at the age of 16 or 17, which followed the spending of several years at sea, he obtained employment with his cousin, who was engaged in the manufacture of foundry facings in New York City. Mr. Kelly went to work in the mill, learning the manufacturing part of the business in all its rudiments. Later, he gave more attention to the sales end of the business and in 1885 he founded the firm of T. P. Kelly & Co., to deal in foundry supplies and equipment. The business was first located on John street, New York, and as it expanded it was moved to Pearl street. It is now located at 544 West Twenty-second street, where commodious offices and warehouses are established. Branch houses are conducted at Chicago and Hamilton, O., and plants for the manufacture of foundry facings are operated at Bloomsbury, N. J., and Irwin, Pa. In addition to a large domestic business, the firm has established an important trade in England, Scotland, Germany, Central America and in other foreign countries. In recent years, Mr. Kelly traveled extensively to different parts of the world and his acquaintanceship extended to the foundrymen of many countries, in addition to his thorough familiarity with the trade in the United States. He was a member of the New England Foundrymen's Association, the Machinery Club of New York, the New York

THOMAS P. KELLY

Athletic Club and various fraternal organizations, including the Friendly Sons of St. Patrick, the Irish-American Historical Society and others. Mr. Kelly left no family and he provided for the transfer of his business to three of his trusted employes, who had been with him for many years. These are: Walter Kaine Jr., Patrick A. Kirby and Michal F. Kerby, who are now conducting the business under its long-established name.

The fortnightly statistics show that the European stocks of copper, on Sept. 30, decreased 612 tons, while copper supplies afloat decreased 225 tons, making a total decrease in the visible supply of 837 tons to 67,358 tons, as compared with 88,195 tons on Sept. 15 and 94,320 tons on Sept. 30, 1910.

Production of Alloyed Steel in 1910

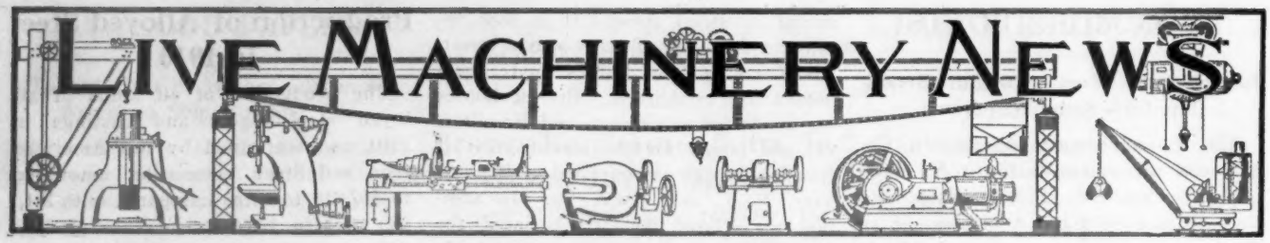
The production of all kinds of alloyed steel ingots and castings in 1910, as ascertained by the American Iron and Steel Association, amounted to 567,819 tons, as compared with 181,980 tons in 1909, an increase of 385,839 tons. In alloyed Bessemer steel the increase was 254,939 tons; in alloyed basic open-hearth, 115,179 tons; in alloyed acid open-hearth, 14,957 tons; and in alloyed crucible, electric, and miscellaneous steel, 764 tons. Alloyed steel ingots and castings were made by 66 plants in 17 states and the District of Columbia in 1910. The following table gives by processes the production in 1910 of titanium, nickel, chrome, and other alloyed steel ingots and castings:

Alloys, gross tons.	Bessemer.	Basic open-hearth.	Acid open-hearth.	Crucible, electric and misc.	Total, gross tons.
Titanium	285,891	40,268	2	155	326,315
Nickel	73	78,103	27,293	1,238	106,707
Nickel-chrome	10	47,685	2,089	2,237	52,021
Chrome	31	15,519	6,301	1,699	23,550
Manganese	9,539	1,868	7,057	856	19,360
Vanadium	122	6,516	905	1,506	9,049
Other alloys.	1,232	16,176	747	12,661	30,816
Total, 1910.	296,898	296,135	44,394	20,392	567,891
Total, 1909.	41,959	90,956	29,437	19,628	181,980

Included in the 16,176 tons of basic open-hearth steel reported opposite "other alloys" are 6,903 tons of chrome-vanadium steel, and 8,760 tons of nickel-chrome-vanadium steel. The 12,661 tons of crucible steel reported opposite "other alloys" include 3,163 tons of tungsten steel and 2,153 tons of carbon steel. The production by states of alloyed steel ingots and castings in 1910 was as follows:

States.	Ingots.	Castings.	Total.
Massachusetts and Conn.	809	1,384	2,193
New York and New Jer.	217,496	9,120	226,616
Pennsylvania	218,214	12,788	231,002
Del., Md., and Dis. of Col.	8,821	563	9,384
Ohio	11,592	1	11,593
Indiana and Illinois	81,530	2,898	84,428
Mich., Wis., and Minn.	.....	923	923
Mo., Iowa, Ore., and Cal.	.....	1,680	1,680
Total for 1910	538,462	29,357	567,819
Total for 1909	158,978	23,002	181,980

The General Refractories Co. has commenced work on the enlargement of the W. H. Wynn works in Pennsylvania, and when the improvements are completed the plant will have a capacity of 70,000 brick a day. The company is also enlarging the Blair Silica Brick works, which, when completed about Nov. 1, will have a capacity of 75,000 brick daily. The capacity of the Olive Hill plant is also being increased to 70,000 brick daily and the company has started work on the erection of a new plant at E. K. Junction, Ky.



Machine Tools

The Holt Engine Co., Burlington, N. C., is in the market for a lathe and milling machine, as well as other machine tools.

The Pecos Valley Southern Railway Co., L. W. Anderson, chief engineer, Pecos, Tex., is receiving bids on machine tools.

The Baltimore & Ohio railroad recently let contracts for the construction of machine shops at Hardman, W. Va. It is understood that contracts for the equipment for the shops will be placed in the near future.

The Kentucky Auto & Machine Co. will purchase machine tools for installation in a repair shop at Paducah, Ky. F. M. Fisher, R. G. Fisher and W. F. Paxton are those principally interested.

The United States Motors Co. has placed in the Boston district a list of 10 or 12 tools for enlargement of mechanical facilities at its Providence, R. I., works. The list aggregates about $10,000.

The board of prison commissioners, Tex., will take bids on machine tools and foundry equipment for installation in the penitentiaries of the state. F. M. Nash, master mechanic, Huntsville, Tex., can furnish specifications.

The Delaware, Lackawanna & Western railroad has practically closed on a list of five or six tools for its Scranton, Pa., shops, aggregating about $8,000. The bulk of the business, as specified, went to one New York house.

The Henry Vogt Machine Co., Tenth and Ormsby streets, Louisville, is in the market for a 28 or 30-inch two-head planer for use on die blocks; power shear for shearing up to 3¼-inch square steel or iron and a drilling or tapping machine for forging plant.

The New York Central railroad still defers action on a large machine tool list which it has had before eastern sellers for some time and the outlook for contracts being placed is very indefinite at present. This railroad originally put out a large list two years ago, but subsequently withdrew it. The matter was again revived about three months ago.

The eastern machine tool trade hears that the Delaware, Lackawanna & Western railroad has in preparation an extensive list of machine tool requirements for distribution to all of its shops. These shops are located at Hoboken, N. J., Scranton, Pa., East Buffalo and Elmira, N. Y. This list promises to be placed without the delay that has attended other recent railroad inquiries in the eastern market.

Power Plant Equipment

The city council, Austin, Tex., has advertised for bids for a steam turbine and condenser.

J. J. Henry, Beaumont, O., is planning to erect a central power station to develop 25,000 horsepower.

The Pea River Power Co., Troy, Ala., is planning to erect a new power plant at an estimated cost of $150,000.

Deep River, Ia., has voted bonds for the installation of a municipal lighting plant.

The Sioux Valley Power Co., Fairview, S. D., will soon call for bids for the construction of a power plant.

The board of public works, Anderson, Ind., is in the market for a turbine and electric generator for the municipal lighting plant.

The Georgia Power Co., Atlanta, Ga., is erecting a sub-station at Rome, Ga., and will require considerable additional machinery.

R. D. Parks, Lake Crystal, Minn., is planning an electric lighting plant, to be installed at Columbus Junction, Ia., at a cost of $15,000.

J. J. Henry, Chicago, and C. A. Miller, Des Moines, are planning to construct a hydro-electric plant at Oskaloosa, Ia.

Stuart M. French, Weiser, Ida., is at the head of a project to install electric pumping plants on the Snake river in western Oregon.

Collinsville, Okla., has voted $45,000 worth of bonds, the proceeds to be used for the installation of an electric light plant.

Kentland, Ind., has granted a franchise to Robert W. Howard for the installation and operation of an electric lighting plant.

The director of public service, Cleveland, will receive bids until Oct. 16 for transformers for the municipal electric lighting plant.

Thief Fiver Falls, Minn., has voted $40,000 worth of bonds for the installation of a steam power plant to be used as an auxiliary to the present lighting plant.

Citizens of Prince Albert, Sask., have subscribed $775,000 for the installation of a hydro-electric power plant to have a capacity of 3,500 horsepower.

The Pennsylvania Railroad Co. has received a permit to erect a power plant at the foot of West Fiftieth street, Cleveland. The estimated cost is $75,000.

The Chicago & Rouge River Irrigation & Power Co. will install a series of electric pumping plants in connection with its hydro-electric and irrigation work near Grants Pass, Ore. G. E. Sanders is manager.

The city of Milwaukee, Harry E. Briggs, commissioner of public works, is taking bids on a steam turbine, generator, exciter, motor generator set and transformers. A condenser will also be required.

William Ansback is purchasing power machinery for installation in a steam laundry which he is establishing at Elizabethtown, Ky. The purchases will be for immediate delivery.

The Tri-State Railway & Electric Co., Steubenville, O., is having plans prepared for repairs to its Steubenville plant to cost approximately $40,000. A. G. White is the general engineer of the company.

The borough of Etna, Pa., has awarded a contract to Walker & Curley for the erection of a slate and wooden power house, 34 x 85 feet and 22 feet high. Contracts for the equipment have not been awarded.

The Kentucky Traction & Terminal Co., Lexington, Ky., has let a contract for the erection of a power house at Versailles, Ky., to furnish current for an interurban line. A good deal of electrical apparatus will be installed.

The Excelsior Paint Co., Louisville, Ky., will erect a plant for the manufacture of paint after Jan. 1. N. G. Baker is the principal stockholder. Power equipment, besides special machines, will be purchased for delivery after the first of next year.

H. R. Blauvelt is in charge of the

organization of a cement manufacturing company at Knoxville, Tenn. A company with $600,000 capital is to be formed. Power machinery and crushing and grinding equipment will be required.

The board of public works, Los Angeles, Cal., will receive bids up to Oct. 23 for water wheels, generators, exciters, transformers and auxiliary equipment to be installed in the municipal hydro-electric power plant at San Francisco canyon. The estimated capacity is 30,000 horsepower.

The Lake Erie, Bowling Green & Napoleon Railway Co., Bowling Green, O., has been authorized to install a hot water heating plant and an electric lighting plant in that city at a cost of $50,000. B. C. Harding and A. E. Royce are the receivers of the company.

New Construction

Oliver B. Caldwell, Corpus Christi, Tex., contemplates the erection of an iron foundry and brass works.

The Ludlow-Saylor Wire Co., St. Louis, Mo., will erect a four-story machine shop in that city. The estimated cost is $30 000.

The Dunn Mfg. Co. will erect a foundry at Oxnard, Cal., and will manufacture steel castings and the Dunn casting wrench.

The Acklin Stamping Co., Toledo, O., advises that plans and specifications for an addition to the plant will not be prepared until next spring.

The Buffalo Steam Roller Co., Buffalo, advises that a current report that the company is moving to Springfield, O., is untrue.

Improvements are being made to the plant of William O'Brien & Co., Pittsburgh, which include an addition to the boiler making plant, 24 x 30 feet.

The Lucas Machine Tool Co., foot of East Ninety-ninth street, Cleveland, has awarded a contract for the erection of an addition, 170x40 feet, to the machine shop.

The Lincoln Williams Twist Drill Co., which recently purchased the plant of the Globe Wire Nail Co., Taunton, Mass., has remodeled the plant and moved into it.

The Bowen Mfg. Co., Auburn, N. Y., advises that it contemplates putting up a small addition to accommodate its annealing and hardening department.

The Pittsburgh Tack & Nail Co., which was recently incorporated with a capital stock of $100,000, is understood to have under consideration plans for a new plant at Rochester, Pa.

The Patterson Foundry & Supply Co., East Liverpool, O., has completed an addition, 50 x 60 feet, at its Walnut street plant, and is enlarging its other plant on lower Walnut street, that city.

The United States Motors Co. contemplates the erection of a plant at some location in the middle west for manufacturing parts for all the models of past seasons. No site has yet been selected.

The Lamb Knitting Machine Co., Chicopee Falls, Mass., advises that it is not in position to give out details regarding its new plant. No arrangements for installing new machinery have been made.

The Mack Mfg. Co. is considering plans for the erection of a new plant and the installation of modern machinery to replace its Union works near Cumberland, W. Va., destroyed by fire in July of this year.

The Clarksburg Foundry & Casting Co., Clarksburg, W. Va., has not yet decided when bids will be received for the erection of its proposed new foundry. Edward J. Wood, that city, is architect.

The Ball Engine Co., Erie, Pa., advises that it has built a 180 x 40-foot addition to its plant. The building will be used for storage and the only machinery to be installed in it is a traveling crane, which has already been purchased.

James G. Dickson, Little Rock, Ark., is president of a company recently organized to manufacture a cotton cleaning attachment for saw gins. The company has a capitalization of $300,000. A plant will be built in Mississippi.

The Elkins Foundry & Machine Co., Elkins, W. Va., has awarded the contract for the construction of a building which will contain a foundry, 60 x 32 feet; a machine shop, 60 x 32 feet; a pattern shop, 50 x 42 feet, office, store rooms, etc.

The Colorado Angle Steel Post Co. advises that it will erect a plant at Pueblo, Colo. The plant will have an initial capacity of 2,000 fence posts every eight hours and the output will be increased as the demand grows.

The Lexington Motor Car Co., Connersville, Ind., advises that it is erecting a new building, 140 x 80 feet, one story, of cement block, to be used for storage of finished cars, and as a repair shop. Very little machinery will be required.

The United States Iron & Steel Co., 206 Prince Theater building, Houston, Tex., is interested in securing the addresses of builders of reheating furnaces. The company will install two furnaces to be used in conjunction with 18-inch re-rolling rail mill at San Jacinto City, Tex.

The Williams Tool Co., Erie, Pa., manufacturer of pipe threading and bolt cutting machinery, advises that it is building a 175x45-foot addition to its machine plant. It is to be of steel and hollow cement fireproof blocks. The new equipment will include a traveling crane, a radial drill and possibly a 36-inch planer.

Prack & Perrine, engineers, Pittsburgh, have prepared plans for the erection of a brick and concrete storage building to be erected at Trafford City, Pa., for the Westinghouse Electric & Mfg. Co., at a cost of about $800,000. Plans for these buildings were prepared some time ago, but it is understood that the entire layout is being re-designed.

The Only Car Co., 1919 Broadway, New York City, has in contemplation further purchases of equipment for a new plant which it has erected at Port Jefferson, L. I. The company has been operating a small shop in New York City. Recently it placed a large order with a New York house for complete machine shop equipment, including machine tools, pulleys, belting, etc., which amounted to about $28,000.

Williams, White & Co., Moline, Ill., advise that they have awarded a contract for a 242 x 54-foot addition to the erecting shop, it having been planned to commence work on Oct. 2. The company does not expect to buy a considerable amount of machinery at this time, although some new machinery is now being installed. The new building will be provided with a traveling crane, running the full length of the building and having a span of 51 feet.

The Indiana Rolling Mill Co., New Castle, Ind., advises that it is having plans drawn and expects to let contracts within the next two weeks for the reconstruction of its shovel plant recently damaged by fire. The proposed plant will comprise four buildings: 240 x 60 feet, 70 x 60 feet, 60 x 50 feet and 100 x 60 feet, respectively. They will be of structural iron, brick, metal sash and will be provided with fireproof roofs. The company hopes to operate the plant sometime in December. The machinery which passed through the fire is about to be overhauled and inspected and it is impossible as yet to state what new machinery will be required. The company has just let a contract for an electric power plant.

Building permit has been taken out by the National Supply Co., Toledo, O., for the erection of a new factory building, 90 x 150 feet, to cost $14,500.

The Ideal Concrete Machinery Co., South Bend, Ind., has increased its capital stock to $500,000 and leased another building in order to increase its output.

The Anderson Steel Furnace & Boiler Works, at Salem, Ore., has increased its capital stock to $30,000 in order to make improvements and additions to its plant.

H. W. Schants has purchased the iron foundry at Macungie, Pa., and will organize a stock company to operate it. The plant has been idle for some time.

G. S. Mills, architect, has prepared plans for the new building at Toledo, for the American Can Co., which will be four stories. The Carnegie Steel Co. will furnish the steel work, which amounts to about 18 tons.

The West Sacramento Electric Co., newly organized, will erect a gas producer and install electrical generating machinery and lay mains at West Sacramento, Cal. Ben P. Lillienthal is president of the company.

The Steadman Foundry & Machine Co., Aurora, Ind., has sold its plant to the city and the Baltimore & Ohio Railroad Co., and will erect a new reinforced concrete plant at a cost of $25,000, which will be occupied as a foundry and machine shop.

The Universal Machine Co., Toledo, O., announces that it will soon add more equipment to take care of its growing automobile work. This concern is agent for several motor vehicles and the machine plant in connection helps to take care of the commercial business.

The New Haven Machine Screw Co., New Haven, is building a factory on Foster street in that city. The main building will be 125 feet, two stories, with an addition to contain elevator, etc., of re-inforced concrete with metal window sash. It will greatly increase the works capacity. The Sperry Engineering Co. is the contractor.

The A. C. Winfield Pump & Machine Co., Brooklyn, whose incorporation was recently noted, advises that it is the successor to A. C. Winfield, who established the business. The company's works are well located at Ralph and Atlantic avenues in a building 100 x 150 feet, and it expects to add some new machinery to dispatch its work.

Owing to the building of the new Cherry street bridge, Toledo, the McNaul Boiler Mfg. Co. has been forced to sell a part of its land at the present site and will build a new plant in East Toledo. Devore & McGoormley, architects, have prepared plans for a new building, 70 x 240 feet, to be located near the Republic Iron & Steel Works. One hundred and forty tons of steel will be used in this building.

Devore & McGoormley, Toledo, have prepared plans for a new plant for the Wood Shovel & Tool Co., Piqua, O. The new plant will be 90 x 300 feet and use about 230 tons of iron.

Miscellaneous

At a special election held Sept. 21 by voters of Grafton, W. Va., it was voted to expend $90,000 to improve the city's water supply.

An ordinance has been passed by the city council of East Liverpool, O., authorizing the issuance of $150-000 in bonds for new waterworks construction.

The Oman Stone Co., Bowling Green, Ky., is purchasing equipment consisting of hoists, power machinery, etc., for installation in a new quarry now being opened.

Chester & Fleming, engineers, Pittsburgh, have been appointed by the borough of Emaus, Lehigh county, Pa., to design and install equipment for the improvement of its water supply.

The Wheeling Mold & Foundry Co., Wheeling, W. Va., will probably be in the market for additional equipment in the near future. Plans for increasing the capitalization are now under consideration.

Extensive purchases of machinery of various kinds which had been in prospect for the new state prison at Wingdale, N. Y., are now deferred through the decision of the state authorities to abandon the site and the construction of a new state prison. The state has made an adjustment with the P. J. Carlin Construction Co., New York, the general contractor, for the portion of the work completed.

Government News

Bids will be opened by the Isthmian canal commission Oct. 9, circular 649A, for furnishing at the Isthmus:

46,000 mechanical bond steel rods, ½ inch square; 715 re-inforcing bars, ⅞ inch square; 320 reinforcing bars, 1 inch square; 50 reinforcing bars, 7/8 inch square; 351 reinforcing bars, 1⅛ inch square; 224 reinforcing bars, ¾ inch square; 128 reinforcing bars, ⅝ inch square; 80 reinforcing bars, 1⅞ inches square; 160 reinforcing bars, ⅝ inch square; 42 reinforcing bars, ½ inch square; 28,732 reinforcing bars, ⅜ inch square; 60 reinforcing bars, ¼ inch square.

In varying lengths. Samples 1 foot long of ½ inch bars desired with bids.

Bids were opened by the bureau of supplies and accounts, navy department, Sept. 26, for the furnishing of material and supplies at various navy yards, as follows:

Schedule 3894, Class 11, Washington, D. C., one trimming press: E. W. Bliss Co., New York, $3,995 and $4,100; Ferracute Machinery Co., New York, $4,567; Toledo Machine & Tool Co., Toledo, $2,900; United Engineering & Foundry Co., Pittsburgh, $2,595.

Schedule 3895, Class 21, Philadelphia, one universal double circular saw, motor driven, without countershaft: Am. Woodworking Machinery Co., Rochester, N. Y., $700; Bentel & Margedant Co., Hamilton, O., $533; Chicago Machinery Exchange $573; Fairbanks Co., Washington, D. C., $639; J. A. Fay & Egan Co., Cincinnati, $585; Frevert Machinery Co., New York, $548: Niles-Bement-Pond Co., New York, $650: Oliver Machinery Co., New York, $680 and $603.

Schedule 3896, Class 31, Charleston, S. C., one motor-driven engine lathe, 100 inches: Niles-Bement-Pond Co., New York, $13,160.

Schedule 3912, Class 41, Washington, D. C., one water weigher, No. 13: Kennicott Co., Chicago Heights, Ill., $1,475; Schultz Patent Rubber Co., Philadelphia, $1,850.

Contracts have been awarded by the navy department to bidders, as follows:

Opening of Aug. 29.

Schedule 3780, Class 1, Mare Island, iron melting cupola, Harron, Rickard & McCone, San Francisco, $850.

Schedule 3820, Class 11, Washington, D. C., one screw machine, Brown & Sharpe Mfg. Co., Providence, R. I., $1,169.55.

Schedule 3820, Class 12, Washington, D. C., turret machine, Cleveland Automatic Machine Co., $1,700.

Opening of Sept. 5.

Schedule 3832, Class 12, Norfolk, 6 cars. R. W. Geldart, New York, at $174.50.

Schedule 3833, Class 21, Brooklyn, steam turbine-driven blowers: General Electric Co., 4 sets for the Decatur, $4,000; Kerr Turbine Co., Wellsville, N. Y., 4 sets for the Dale; $3,870; Terry Steam Turbine Co., New York, 4 sets for the Chauncey, $4,300; Westinghouse Machine Co., Pittsburgh, 4 sets for the Barry, $4,400.

Schedule 3870, Class 45, Washington, miscellaneous files: L. A. Clark & Sons, city, $2,292.

Opening of Sept. 12.

Schedule 3828, Class 28, Puget Sound, 600 feet seamless voice tubing, Nat'l Brass & Copper Tube Co., New York, $313.60.

Schedule 3828, Class 32, Mare Island, 10 sets taper reamers, Rawles-Cobb Co., Boston, $181.50.

Schedule 3828, Class 36, Mare Island, 48 sets steel figures, do., $174.84.

Schedule 3829, Class 53, do., 2,100 pounds sheet brass, Old Dominion Paper Co., Norfolk, Va., $390.30.

Schedule 3829, Class 53, do., 18,000 pounds seamless drawn brass pipe, National Brass & Copper Tube Co., New York, $3,132.

Schedule 3829, Class 54, Puget Sound, 700 pounds copper tubing, do., $158.25.

Schedule 3829, Class 55, do., 7,000 feet wrought iron or steel pipe, Crane Co., Seattle. $413.60.

Schedule 3829, Class 56, Mare Island, 450 valves, Nelson Valve Co., Philadelphia, $444.50.

Schedule 3829, Class 57, do., 17,700 hexagon steel nuts, E. F. Kirwan & Co., Baltimore, $1,062.

Schedule 3880, Class 141, Washington, D. C., 6150 pounds Monel metal, Berry & Aikens, Philadelphia, $1,898.05.

Schedule 3880, Class 143, Washington, D. C., 3,120 pounds bright finished steel, E. F. Kirwan & Co., Baltimore, $93.60.

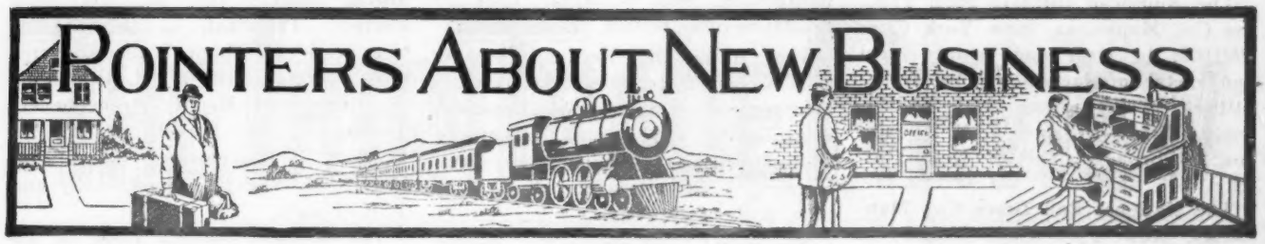
Schedule 3880, Class 144, Newport, R. I., 1,200 pounds nickel steel rod, Midvale Steel Co., Philadelphia, $384.

Schedule 3880, Class 145, Newport, R. I., 500 pounds brass tubing, Union Spring & Mfg. Co., N. Kensington, Pa., $188.

Schedule 3884, Class 169, Portsmouth, N. H., 14,000 pounds rolled sheet zinc, George R. Johnson, Baltimore, $122.25.

Schedule 3884, Class 171, Charleston, S. C., 500 feet wrought iron or steel pipe, Crane Co., Baltimore, $61.20.

Schedule 3884, Class 172, Charleston, S. C., 5,250 pounds medium steel hub rivets, Jas. Clerdennin, Baltimore, $152.56.



(In order to assist the post office in delivering letters to new concerns, it is suggested that the names of incorporators be written in the lower left hand part of every envelope addressed to such new companies.)

New Buyers

The Acme Carburetor Mfg. Co., Dayton, O.; $10,000; by Charles S, Barkelew.

The Akin Steel Tie Co., Sumner, Mo.; $300,000; by J. H. Akin, J. D. Stoner and C. M. Hopper.

The W. & C. Mfg. Co., Kansas City, Mo.; $25,000; by Elton D. Wheeler, Burt T. Cubine and T. M. Douglas.

The Poss Motor Co., Detroit, Mich.; to manufacture light delivery cars; by Frank R. Poss, president.

The Economy Welding Machine Co., Kansas City, Mo.; $50,000; by Graham E. Shand, William C. Magee and Robert E. Parsons.

The Neal Machinery Co., Akron, O.; $10,000; by Geo. P. Neal, E. N. Neal, Hazel L. Cole, A. S. Mottinger, H. M. Hagelbarger.

The International Automatic Signal Co., Kansas City, Mo.; $1,000,000; by C. H. Carson, Louis B. Leach and York Burgess.

The Acme Sheet Metal Co., Jersey City, N. J.; $50,000; to manufacture steel ceilings; by M. C. Duane, N. E. Wiggins and Geo. W. Everitt.

The Diamond Iron Works, Leighton, Pa.; $30,000; to manufacture iron and conduct a general foundry; by Treasurer George E. Gray, Leighton.

The New Process Steel Corporation, Lancaster, Pa.; $50,000; to manufacture bars, rods and tubes; by Treasurer H. L. McClure, Lancaster.

The Industrial Implement Co., Ithaca, N. Y.; $20,000; to manufacture farm implements, etc.; by John H. O'Hara, Wm. C. Douglass, Patrick Leary.

The Ross Machine Co., Lafayette, Ind.; $15,000; to manufacture automobile parts; by directors, William, David E., Linn C. and Edward A. Ross.

The Merchants' Motor Car Co., Newark, N. J.; $500,000; to manufacture motor cars; by Anthony Del Bagno, Benjamin Orange and George Hubschmitt.

The Columbia Horseshoe Mfg. Co.; $50,000; by James A. Neil, Washington, D. C.; Stephen D. Baldwin, Cincinnati, O.; Harry A. Hood, New York City.

The Art Brass & Fixture Mfg. Co., Pittsburgh, Pa.; $100,000; to manufacture gas and electric fixtures and art novelties; by Treasurer L. R. Jeffords, Pittsburgh.

The Blair Mfg. Co., Newark, O.; $300,000; to manufacture automobiles; by Frank M. Blair, John P. McCune, Willis A. Robbins, Edwin C. Wright, Harry H. Baird.

The American Roller Bearing Co., Camden, N. J.; $500,000; to manufacture roller bearings; by V. A. Murray, L. A. Myers and Doering Bellinger, all of Camden.

The Crooks-Uhle Mfg. Co., Bucyrus, O.; $10,000; to manufacture light steel novelties and do general machine work; by Earl G. Crooks, Fred C. Uhle, John Martinitz, etc.

The Hobbs-McCarty Co., Cleveland, O.; $25,000; to manufacture special machinery and tools; by F. B. Hobbs, Clara B. Hobbs, W. F. McCarty, etc.

The Compania Bomba Artesiana, Eagle Pass, Tex.; $15,000; to manufacture patented double-action pump; by Osie S. Harper, John S. Buckley and W. L. Lyman.

The Granger Electric & Mfg. Co., Warren, Ind.; $50,000; to manufacture electric irons, toasters, etc.; by directors, Francis Granger, R. L. Tobin, Frank Canaday.

The Norwalk Motor Car Co., Martinsburg, W. Va.; $300,000; to manufacture and sell automobiles; by F. A. Minor, H. L. Alexander, G. W. McKown, F. A. Minor, etc.

The Steel Forging Co., Pittsburgh, Pa.; $10,000; to manufacture steel or iron into horseshoes and other forgings; by Treasurer S. Fritz, 5460 Penn avenue, Pittsburgh.

The Automatic Concrete Machinery Co., St. Paul, Minn.; $50,000; to manufacture concrete and cement machinery; by John Lynch, Oliver and Clarence R. Wilkinson, all of St. Paul.

Bertsch & Co., Cambridge City, Ind.; $100,000; to manufacture iron and wood-working machinery; by directors, C. A., L. H., W. R. and J. A. Bertsch, and John K. Smith.

The V. T. Grabs Co., King, N. C.; $50,000; to manufacture portable sawmills, wood-working machinery, etc.; by V. T. Grabs, J. W. Slate and G. F. Wilson. Mr. Grabs is president.

The Midland Electric Heating Co., Chicago.; $10,000; to manufacture electric heating appliances; by Richard W. Thornton, Henry Hiestand, both of 420 Chamber of Commerce, Chicago.

The Calumet Car Co., East Chicago, Ind.; $75,000; to build railway cars; by directors, A. A. McCalla, D. W. Rogers, G. W. Lytton, W. L. Lytton, P. H. McCalla and A. H. Eroe.

The Journal Box Lifting Co., Pittsburgh, Pa.; $5,000; to manufacture iron and steel jacks, journal box lifting apparatus and tools and machinery; by Treasurer A. R. Bassett, Pittsburgh.

The Arithstyle Co., New York City; $50,000; to manufacture calculating machines; by Edmund Powers, 15 Broad street; L. G. Nathan, 15 West 177th street, New York City, etc.

The Maxant Engineering & Mfg. Co., Chicago; $100,000; to manufacture machinery and tools; by Basil Maxant, Wm. D. Johnson, M. D. Johnson, 1002 No. 19 South La Salle street, Chicago.

The Arriozone Electric Ventilating Co., Ltd., Toronto; $350,000; to manufacture electrical appliances; provisional directors: Gideon Grant, Robert McKay, Daniel Grant and others.

The American Brake Lever Co., Floyd, Va.; $15,000; by President, V. M. Sowder; vice president, R. F. Tompkins; general manager, S. R. Brame, and secretary and treasurer, J. R. Peterman.

The Humason Rail Joint Co., Shreveport, La.; $200,000; to manufacture device invented by G. A. Humason to prevent wrecks by spreading rails; by President J. C. Willis, and secretary, C. P. Munday.

The Onondago Brass Co., Syracuse, N. Y.; $15,000; to manufacture and deal in brass, bronze, aluminum, silver metal, etc.; by Henry Mahley, J. A. Underdown, L. F. Meagley, all of Syracuse.

The Warren Steel Casting Co., St. Louis, Mo.; $12,000; to operate factories, etc.; to make castings, etc.; by Charles E. Hayden, John A. Warren, William A. Kammerer, Patrick Cunningham and Lorenz Wittmann.

The American Infusion Steel Process Co., Manhattan, New York City; $900,000; to treat and temper steel and metal products, etc.; by A. E. Stilwell, 149 Broadway; A. J. Thompson, 60 Broadway; and W. N. Thompson, 60 Broadway, all of New York City.

The National Rail Brace Co., Manhattan, New York City; $50,000; to manufacture and deal in iron and steel rail braces and contractors' supplies; by Joseph C. Lynch, 1348 College avenue; A. Bulnes Tavares and Mason G. Worth, both of 32 Bay, all New York City.

The Electric Mail Carrier Co., Manhattan, New York City; $25,000; to manufacture mechanical appliances and devices; by Chas. E. Reid, 132 East Twenty-third street, New York City; Wm. J. Griffiths Jr., 434 South Fourth avenue; and Chas. G. Rice, 555 South Fifth avenue, both of Mt. Vernon.

General Industrial

The Wagner Electric Mfg. Co., St. Louis, has increased its capital stock from $1,200,000 to $1,500,000.

The Washington Tin Plate Co., Washington, Pa., has increased its capital stock from $300,000 to $350,000.

The West Allis Malleable Iron & Chain Belt Co., West Allis, Wis., has changed its name to the Federal Malleable Co.

The Hopkins & Allen Arms Co., Norwich, Conn., manufacturers of fire arms, has been sold to a syndicate organized by W. T. Fields Co., New Haven, Conn. The plant will probably be enlarged.

The American Chocolate Machine Co., Kittery, Me., has been incorporated to manufacture confectionery machinery. Horace Mitchell and C. E. Snothers are president and treasurer of the company. Both live in Kittery.

W. L. Kizer and Jacob Wolverton have purchased the Malleable Steel Range Co., at South Bend, Ind. H. A. Engman Jr. has retired as president and Joseph D. Oliver and Lewis C. Matthews have disposed of their interests.

The Birmingham Stove & Range Co., Birmingham, Ala., which has been incorporated with a capital stock of $50,000 to manufacture stoves and ranges, has secured and will operate the plant of the Alabama Mfg. Co., Birmingham.

The Sather-Philipp Aeroplane Co., of Chattanooga, Tenn., has been organized with the following officers: President, Lawrence H. Smith; vice president, Oscar Sather; secretary and treasurer, T. F. House. The company was recently incorporated with a capital stock of $10,000 to manufacture aeroplanes.

The Automatic Needle Threader Co., Augusta, Me., has been recently incorporated to make sewing machine attachments and special machinery. The officers of the company are: President, E. J. Pike; treasurer, F. J. Coleman, both of Augusta.

The Spiral Tool Driver Co., Springfield, Mass., has been recently incorporated to do a manufacturing business. The officers of the company are: President, David Rioux; treasurer, Arthur J. Brunnell. Both live in Springfield.

George D. Selby, of Portsmouth, O., has secured an order of sale of several tracts of land in Bloom township, owned by the Clare Iron Co. The proceeds of the sale will be used toward satisfying a judgment secured by the plaintiff against the Clare company for the sum of $28,535.83.

A company has been formed by Thomas D. Penniman, 307 Marine Bank building, Henry H. Weigand and Charles Goldsborough, all of Baltimore, Md., to take over the E. J. Codd Co., manufacturers of machines, boilers and tanks. The plant is located at 700-708 S. Caroline street, Baltimore.

The American Mine Door Co., Canton, O., has sold a tract of land composed of 90 building lots, approximately eight acres, to the United States Steel Co. The land adjoins the United States company's plant. The property will be used as a storage yard for raw materials. No buildings, except probably a few sheds, will be erected at this time.

The Bartow Iron & Mining Co., Emerson, Ga., which was recently incorporated with a capital stock of $30,000, with the privilege of increasing to $400,000, will develop property at Emerson. The plans include the installation of six to eight washers with a daily capacity of from four to six cars of ore. The incorporators are, Dr. T. V. Hubbard, Paul Stegale and F H. Peck.

The Sterling Insulated Wire Co., 1910 West Kinzie street, Chicago, upon the applications of creditors, was put into the hands of a receiver recently, E. D. Buell being named as the receiver. Attorneys for the creditors claim that the liabilities of the company amount to $70,000, and the assets to about $40,000. The creditors and their claims are: Pittsburgh Steel Co., $1,551.81; Arthur L. Whitely, $838.83; Paulson, Linkroun & Co., $1,035; John F. Street & Co., $1,342.54; the United States Reduction Co., $124.56.

At a recent meeting of the Cleburne Foundry Co., Cleburne, Tex., the following officers and directors were elected: President, C. W. Breech; vice president, Hugh Wallace; secretary and treasurer, W. P. Hamilton; superintendent, M. H. Brokelmeyer; directors, C. W. Breech, W. A. McDonald, H. Brokelmeyer, Hugh Wallace, J. M. Ragsdale Jr., E. Lilly and J. A. Feagin.

The Northern National Bank, of Toledo, O., in a petition filed Sept. 14, has asked for an accounting for the indebtedness of the Findlay Axe & Tool Co., Findlay, O., which became insolvent Jan. 13, 1909. The plaintiff claims that the liabilities of the company since 1892 are more than $63,000, and that the capital stock of the company was increased three times without the authority of law The sum of indebtedness to the bank is claimed to be $10,983.84.

The stockholders of the Iowa Malleable Iron Co., Fairfield, Ia., held their annual meeting at Fairfield recently. A very favorable account was given by those who have had the plant in charge for the past year. The following officers were elected: President, William Louden; vice president, Joseph Dain; secretary and general manager, W. C. Spaulding, and assistant secretary, W. V. Hughes. The following directors were re-elected: William Louden, R. B. Louden, W. C. Spaulding, E. A. Howard, C. M. Junkin, J. P. Manatrey, Edward Hunt, Joseph Dain and Paul Arbenz.

Grain and seed separators are to be manufactured by the National Farm Device Co., which has been organized by a number of capitalists. A factory is to be established in this city with branch factories in several states. The company is incorporated with an authorized capitalization of $250,000. George W. Benedict, 415½ North Delaware street, has been elected president; J. Morgan White is vice president, and Guy C. Aronson, secretary-treasurer. The device to be manufactured is the invention of Claude L. Canady, of Dublin, Ind., who is a director in the company.

Trade Notes

The Kern Machine Tool Co., Cincinnati, has secured the building formerly used by the Fireproof Metal Furniture Co. at Hamilton, O., and will move its plant to that place.

Fires

The H. A. McElroy Implement Co., Bowling Green, Ky., recently suffered a $4,000 loss by fire.

The foundry of the Richmond Stove Co., at Richmond, Va., was damaged to the extent of $3,000 by a recent fire.